Southern Medical Journal

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DECEMBER 1958

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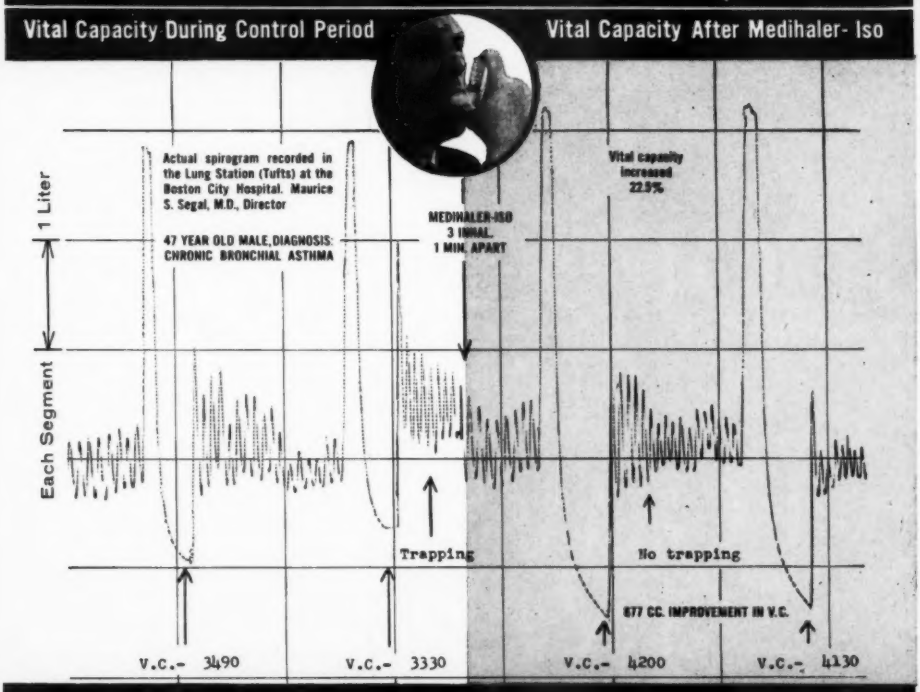
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Other studies show the important role of the B vitamins in antibody formation. Thus, *Nutrition Reviews*[2] reports: "Present evidence indicates that certain B vitamins, notably pyridoxine, pantothenic acid and folacin, play a significant role in antibody synthesis." According to Pollack and Halpern,[3] "Under-nutrition leads to increased susceptibility to infection and decreased resistance to established disease." And "vitamin deficiency states also may adversely influence circulating antibodies."

Halpern[4] reports that "good nutrition is important for optimal resistance to infection, for a superior tissue capability to cope with disease and injury, and for maximum antibody production . . . nutrition participates in the prophylaxis against most acute infections . . ."

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REFERENCES: 1. Carlozzi, M.: Antibiotic Med. & Clin. Therapy 5:146 (Feb.) 1958. 2. Welch, H.; Wright, W. W., and Staffa, A. W.: Antibiotic Med. & Clin. Therapy 5:52 (Jan.) 1958. 3. Marlow, A. A., and Bartlett, G. R.: Glucosamine and leukemia, Proc. Soc. Exp. Biol. & Med. 84:41, 1953. 4. Shalowitz, M.: Clin. Rev. 1:25 (April) 1958. 5. Nathan, L. A.: Arch. Pediat. 75:251 (June) 1958. 6. Cornbleet, T.; Chesrow, E., and Barsky, S.: Antibiotic Med. & Clin. Therapy 5:328 (May) 1958. 7. Stone, M. L.; Sedlis, A., Bamford, J., and Bradley, W.: Antibiotic Med. & Clin. Therapy 5:322 (May) 1958. 8. Harris, H.: Clin. Rev. 1:15 (July) 1958.

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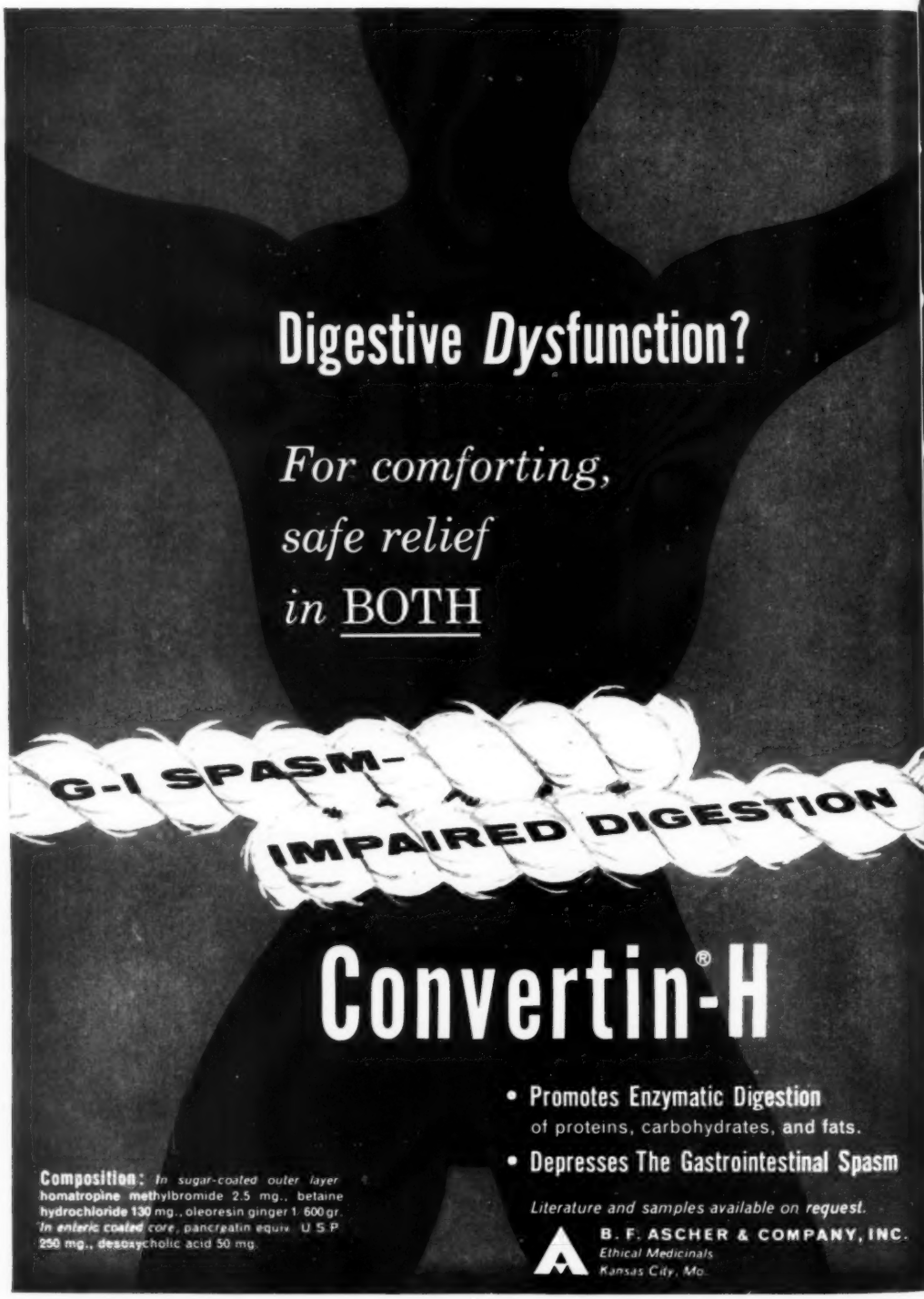
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1. Proctor, R. C., Southern Psychiatric Assoc. Meeting, October 7, 1957. 2. Feuss, C. D. and Gragg, L. Jr.: Dis. Nerv. Sys. *18*:29, 1957.

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References:
1. Boland. E. W.: California Med. 88:417 (June) 1958. 2. Bunim, J. J., et al.: Arthr. & Rheum. 1:313 (Aug.) 1958 3. Boland, E. W., and Headley, N. E.: Paper read before the Am. Rheum. Assoc., June 21, 1958, San Francisco, Calif. 4. Bunim, J. J., et al.: Paper read before the Am. Rheum. Assoc., June 21, 1958, San Francisco, Calif.

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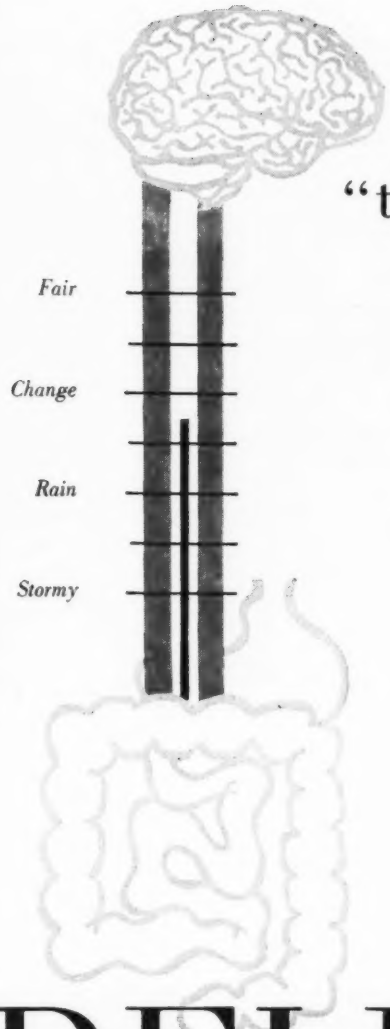

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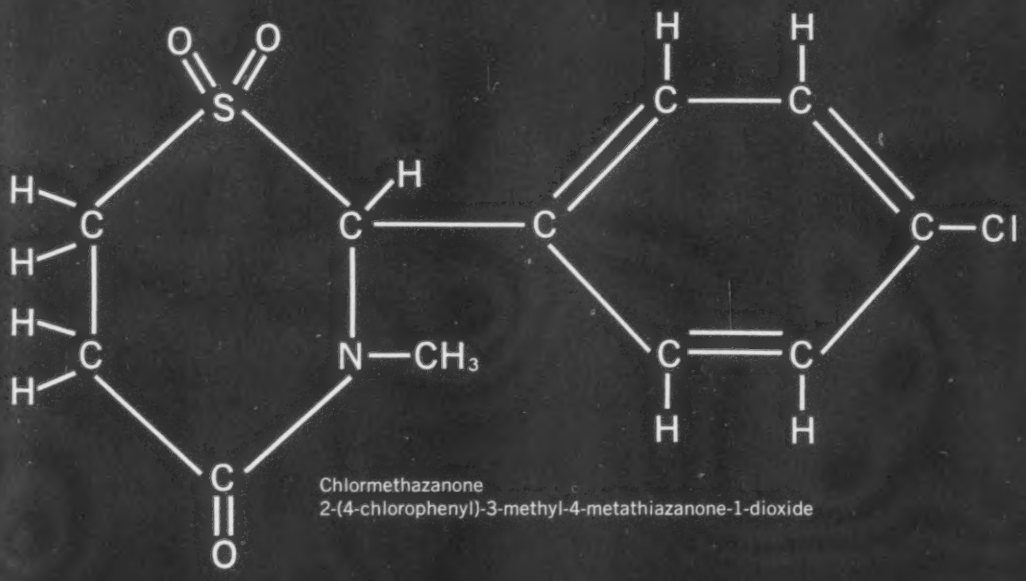

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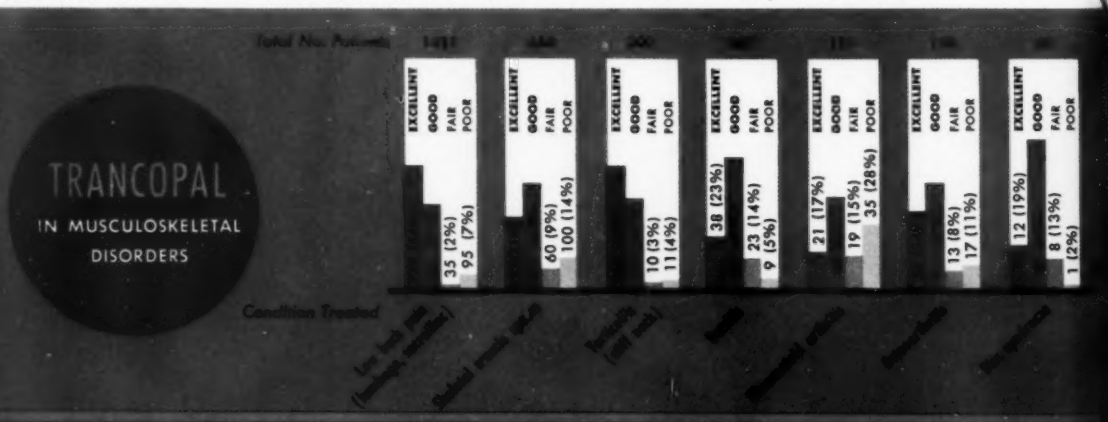

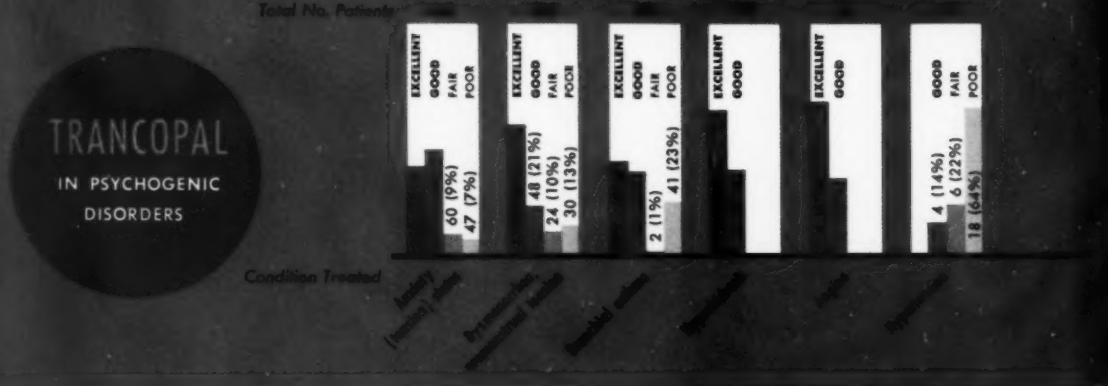

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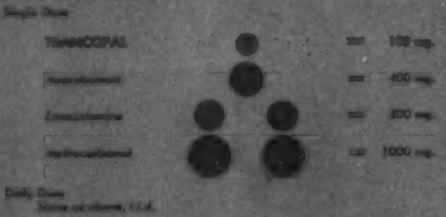

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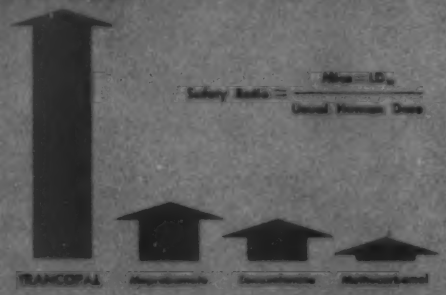


Comparative pharmacologic tests showed that Trancopal is up to thirteen times as safe, or up to thirteen times less toxic. The measure of safety was the LD_{50} in mice/usual human dose.

FOR CLINICAL EFFECTIVENESS

A clinical comparison in low back pain, torticollis, bursitis and anxiety states showed that Trancopal is up to four times as effective. Each of 40 patients received all four drugs in random rotation for several days. While each of the four drugs gave some relief, only the one providing the most effective relief was recorded.

INDICATIONS

Musculoskeletal
- Low back pain (lumbago)
- Neck pain (torticollis)
- Bursitis
- Rheumatoid arthritis
- Osteoarthritis
- Disc syndrome
- Fibrositis
- Joint disorders (ankle sprain, tennis elbow, etc.)
- Myositis
- Postoperative myalgias

Psychogenic
- Anxiety and tension states
- Dysmenorrhea
- Premenstrual tension
- Asthma
- Emphysema
- Angina

Neurologic
- Muscle spasm in paralysis agitans, multiple sclerosis, hemiplegia, poliomyelitis

TRANCOPAL thoroughly evaluated clinically

"In the treatment of conditions associated with skeletal muscle spasm there was a high percentage of satisfactory results (excellent, good or fair) in 310 patients (94%) out of 331 treated . . . In 120 patients with simple anxiety or tension states results were satisfactory in 114 (95%). Dosage of chlormethazanone in all cases was 100 mg. t.i.d. As well as relieving the anxiety or tension state, chlormethazanone also allowed these patients to resume their usual occupations." (Lichtman)

Trancopal

the first true "TRANQUILAXANT"

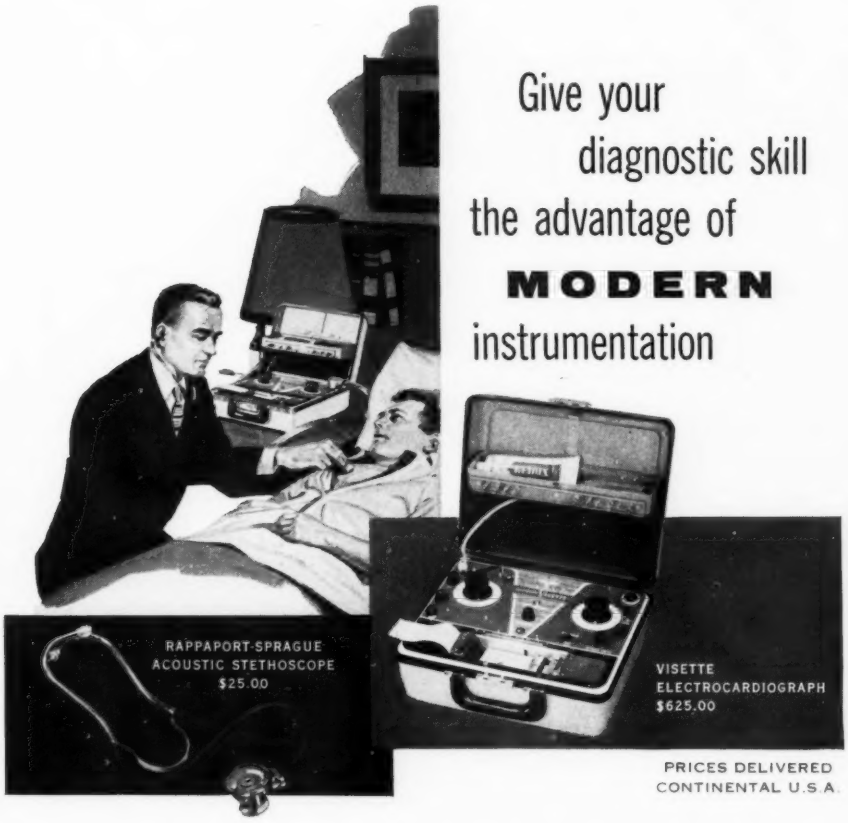
Dosage: One Caplet (100 mg.) orally three or four times daily. Relief of symptoms occurs in fifteen to thirty minutes and lasts from four to six hours.

Supplied: Trancopal Caplets® (scored) 100 mg., bottles of 100.

Winthrop Laboratories • New York 18, N. Y.

• Baker, A. B.: Modern Med. 26:140, April 15, 1958. • Cohen, A. I.: In preparation. • Cooper Study, Department of Medical Research, Winthrop Laboratories. • Gesler, R. M., and Cochin: Toxicol. & Appl. Pharmacol. To be published. • Gesler, R. M., and Surrey, A. R.: J. Pharmacol. & Therap. 122:24A, Jan., 1958. • Gesler, R. M., and Surrey, A. R.: J. Pharmacol. & Exper. Therap. 122:61?, April, 1958. • Lichtman, A. L.: Kentucky Acad. Gen. Pract. J. 4:26, Oct., 1958. • Surrey, A. R.; Whaley, W. G., and Gesler, R. M.: J. Am. Chem. Soc. 80:3469, July 5, 1958.

Printed in U. S. A. 11-58



Give your diagnostic skill the advantage of **MODERN** instrumentation

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Whenever a diagnostic "tool" can give you some *added* advantage in *better* performance or *wider* usefulness — your own diagnostic skill is aided by *more complete facts*, and your time is saved through simpler, more convenient use. *Each of these Sanborn instruments gives you just such added advantages.*

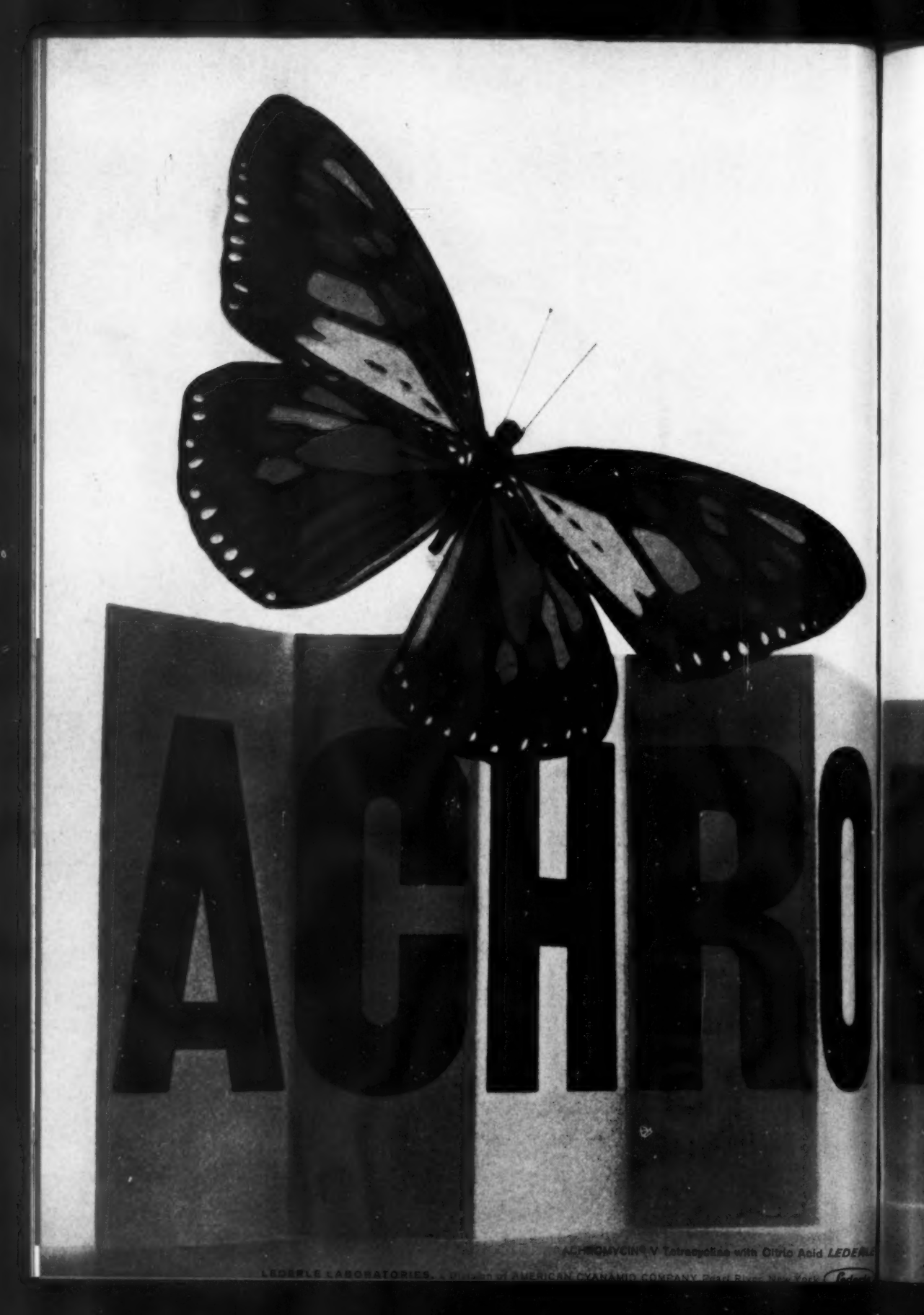
With the new Rappaport-Sprague Acoustic Stethoscope, sounds which are only faintly discernible or at the threshold of audibility with conventional stethoscopes become clearly audible, providing new assurance in auscultation. Equipped with five chest pieces for sensing and localizing sounds of various pitch, and three sets of ear pieces for proper fit, this new Stethoscope clearly reflects the results of ten years of research and investigation undertaken during its development.

In the Visette electrocardiograph, *true* portability in a clinically accurate ECG is now a practical reality. By its brief case size and 18-pound weight, the Visette lets you take 'cardiography *to your patient* — in his home, at the hospital, at an industrial plant clinic, wherever the need exists. Modern electronic components — a new, much lighter galvanometer — design innovations ranging from pushbutton grounding and double-check standardization signals to fully automatic stylus stabilization as leads are switched — make the Visette the most *convenient* ECG you (and your technician) can use. And this first (and still the only) 18-pound 'cardiograph is now *being used* by more than 3000 doctors, both here and abroad.

For the benefits modern instrumentation can give you and your patients — by extending your diagnostic abilities and saving your time in day-to-day practice — ask your local Sanborn man for complete facts on these two unusual instruments. He will also be glad to tell you how you may use a Visette for 15 days in your own practice *without cost or obligation*, through the exclusive Sanborn "Try-Before-Buying" plan. Call or write him soon — or address Inquiry Director at the main office in Waltham, Mass.

SANBORN COMPANY

MEDICAL DIVISION 175 Wyman Street, Waltham 54, Massachusetts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ACHROMYCIN® V Tetracycline with Citric Acid LEDERLE
LEDERLE LABORATORIES, A Division of AMERICAN CYANAMID COMPANY, Pearl River, New York

MYCIN

"... Well, I usually prescribe Rorer's Maalox. It's an excellent antacid, doesn't constipate and patients like its taste better."

MAALOX® an efficient antacid suspension of magnesium-aluminum hydroxide gel.
Suspension: Bottles of 12 fluidounces
Tablets: 0.4 Gram, Bottles of 100
Samples on request
WILLIAM H. RORER, INC., Philadelphia 44, Pennsylvania

Assuredly

the

lady

is

fastidious

when recommending a vaginal douche

Massengill Powder has a "clean" antiseptic fragrance. It enjoys unusual patient acceptance.

Massengill Powder is buffered to *maintain* an acid condition in the vaginal mucosa. It is more effective than vinegar and simple acid douches.

Massengill Powder has a low surface tension which enables it to penetrate into and cleanse the folds of the vaginal mucosa.

Massengill Powder solutions are easy to prepare. They are nonstaining, mildly astringent.

Massengill® powder

Indications: Massengill Powder solutions are a valuable adjunct in the management of monilia, trichomonas, staphylococcus, and streptococcus infections of the vaginal tract. Regular douching with Massengill Powder solution minimizes subjective discomfort and maintains a state of cleanliness and normal acidity without interfering with specific treatment.

Currently, mailings will be forwarded only at your request. Write for samples and literature.

THE S. E. MASSENGILL COMPANY

BRISTOL, TENNESSEE • NEW YORK • SAN FRANCISCO • KANSAS CITY

In modern feminine hygiene and therapy

massengill® powder

Massengill Powder has cosmetic elegance. Its clean, refreshing fragrance is acceptable to the most fastidious for therapeutic or routine hygienic use. Massengill Powder solutions are easily prepared, convenient to use, nonstaining. They effectively cleanse, deodorize and soothe the vaginal mucosa, while their mild astringent properties tend to decrease vaginal secretions.

CLEAN-UP AFTER ANTIBIOTICS

Following intensive antibiotic therapy, increasing numbers of female patients return complaining of vulvar pruritus or vaginitis . . . and profuse vaginal discharge.

Most of these present the classical picture of Monilia albicans, Trichomonas vaginalis or mixed infections. When these infections occur, regular use of Massengill Powder, with its pH of 3.5 to 4.5, helps restore the normal acidity of the vaginal tract. At this normal pH the growth of pathogenic organisms is inhibited and the growth of the normal vaginal flora encouraged,[1] thus reducing the barriers to specific medication.

LOW pH RETENTION

Massengill Powder is buffered to retain an acid condition. In a recent clinical observation, ambulatory patients—with an alkaline vaginal mucosa resulting from pathogens—maintained an acid vaginal mucosa of pH 3.5 for a period of 4 to 6 hours after douching with Massengill Powder; recumbent patients maintained a satisfactory acid condition up to 24 hours. Simple acid douches (vinegar or lactic acid) are quickly neutralized by an alkaline vaginal mucosa; therefore, they are somewhat unsatisfactory in maintaining the required acid pH of the vagina.[2]

LOWER SURFACE TENSION

Massengill Powder in the standard solution has a surface tension of 50 dynes/cm. as compared to that of water and simple acid solutions with 72 dynes/cm. This added property of reduced surface tension enables Massengill Powder to penetrate into and cleanse the folds of the vaginal mucosa, thus increasing the therapeutic effectiveness. Lowered surface tension makes the cell wall and cytoplasmic membrane of the infecting organism more permeable and thus more susceptible to specific therapy.[2]

SUPPLY

Massengill Powder is supplied in glass jars of the following sizes:

Small, 3 oz.
Medium, 6 oz.
Large, 16 oz.
Hospital Size, 5 lbs.

Pads of douching instructions for patient use available on request.

REFERENCES

1. Lang, W.R., Rakoff, A.E., Am. Geriatrics Soc. *1*:520 (1953).
2. Arnot, P.H., The Problem of Douching, Western Journal of Surg., Obs., and Gyn., Vol. 62, No. 2:85 (1954).

THE S. E. MASSENGILL COMPANY

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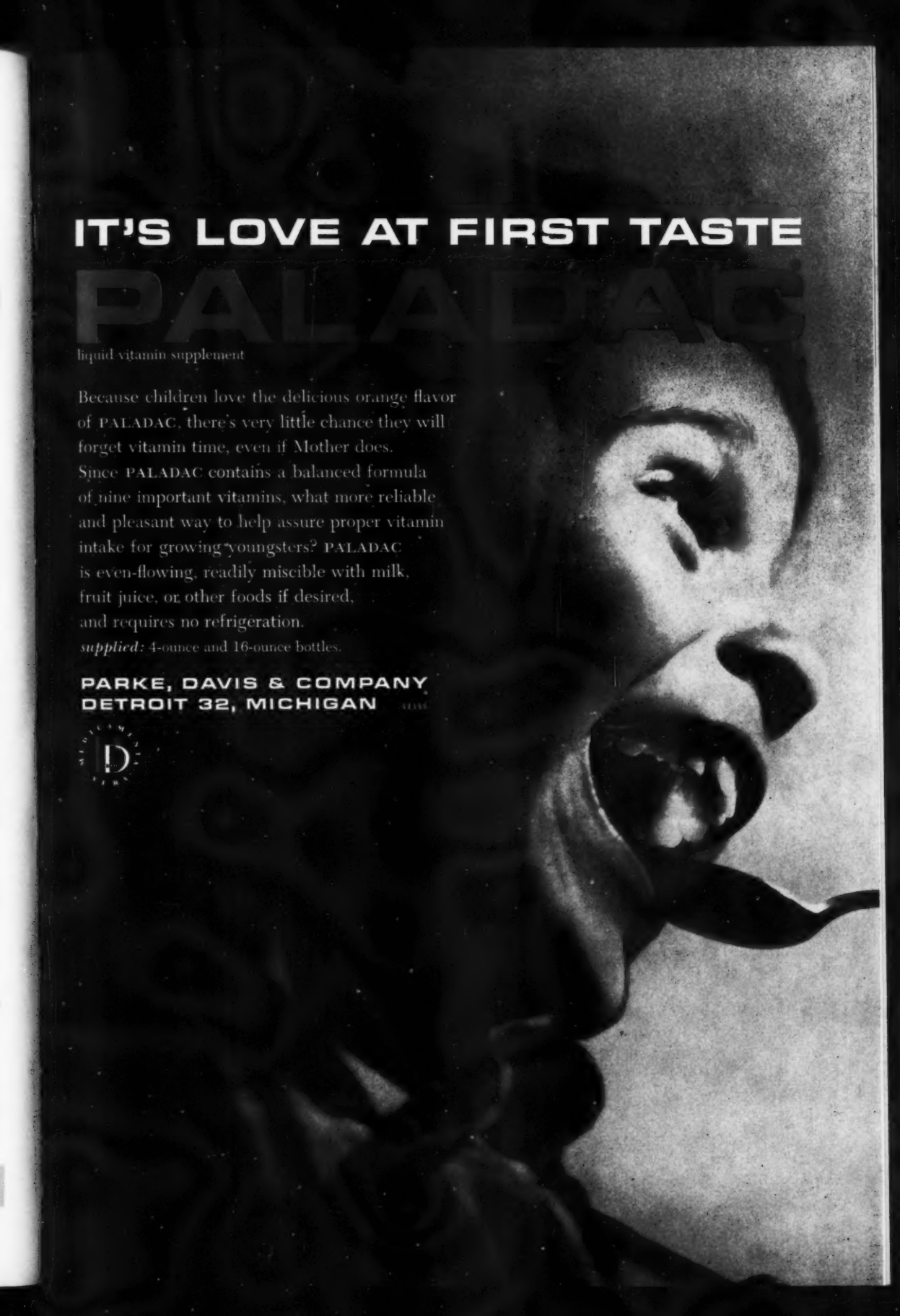
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PALADAC
liquid vitamin supplement
Because children love the delicious orange flavor of PALADAC, there's very little chance they will forget vitamin time, even if Mother does. Since PALADAC contains a balanced formula of nine important vitamins, what more reliable and pleasant way to help assure proper vitamin intake for growing youngsters? PALADAC is even-flowing, readily miscible with milk, fruit juice, or other foods if desired, and requires no refrigeration.
supplied: 4-ounce and 16-ounce bottles.
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use XYLOCAINE *first...*
as a local anesthetic
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SWAB SPRAY INFILTRATION NERVE BLOCK

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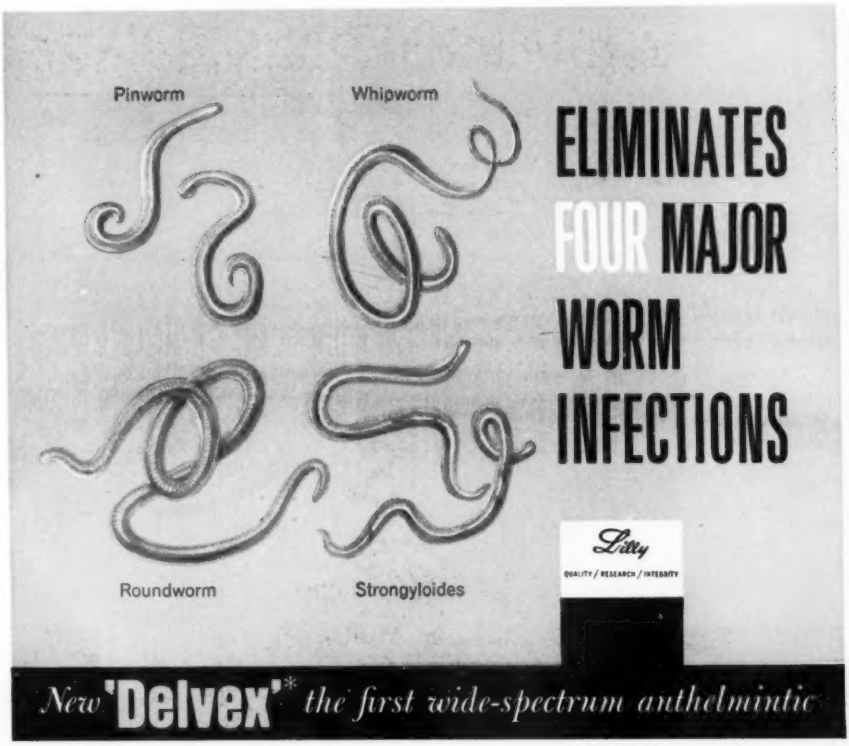
*U.S. PAT. NO. 2,441,498 MADE IN U.S.A.



Clinical studies[1] *show:*

- 'Delvex' is effective orally, usually within five days, against four of the five most common worm infections:

Pinworm Whipworm

Roundworm Strongyloidiasis

- It also inhibits, and sometimes eliminates, hookworm infection.
- It is fully effective in both single and multiple infections and in both heavy and light infections.
- It eliminates pinworm infection in 100 percent of patients.
- It is the first effective and practicable agent for the oral treatment of strongyloidiasis and whipworm infection.
- No adjunctive measures are needed with 'Delvex' therapy.

Further information may be obtained from your Lilly representative or by writing to our Medical Department.

*'Delvex' (Dithiazanine Iodide, Lilly)
1. Swartzwelder, J. C., et al.: J. A. M. A., 165:2063, 1957.

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Again and again, a first choice

for **infection**

- urinary tract infections
- upper respiratory tract infections with bacterial invasion
- mixed infections
- infections not readily diagnosed

for **action**

- attack in depth—both bactericidal and bacteriostatic
- attack in breadth—against many common gram-positive and gram-negative organisms

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for **remission**

PEN·VEE® SULFAS

Wyeth® Philadelphia 1, Pa.

Tablets: Penicillin V (Phenoxymethyl Penicillin) and Sulfonamides
For Suspension: Benzathine Penicillin V and Sulfonamides

Supplied: Tablets, bottles of 36. For Suspension, bottles of 2 fl. oz. upon reconstitution. Each tablet and 5-cc. teaspoonful contains 125 mg. (200,000 units) of penicillin V (the suspension containing the benzathine salt of penicillin V) and 0.25 Gm. each of sulfadiazine and sulfamerazine.

the next two patients
that you see
with biliary dysfunction
can demonstrate to you
the effectiveness of
NEOCHOLAN
in relieving

flatulence and belching
intestinal atony
indigestion
chronic constipation

Neocholan® greatly increases the flow of thin, nonviscid bile and corrects biliary stasis by flushing the biliary system. It also acts as a smooth muscle relaxant, resulting in an unimpeded flow of bile and pancreatic juices into the small intestine.

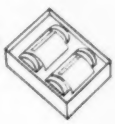
Each Neocholan tablet contains:

Dehydrocholic Acid Compound..	250 mg.
Homatropine methylbromide....	1.2 mg.
Phenobarbital.....	8.0 mg.

Bottles of 100 tablets.

PITMAN-MOORE COMPANY
P. O. Box 1656, Indianapolis 6, Indiana

Please send me, without charge, two clinical packages of Neocholan.



_____ M.D.

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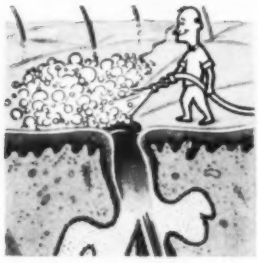
SMJ

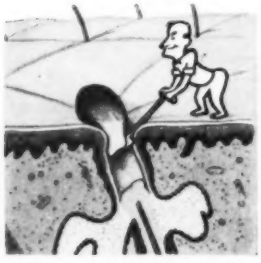
IN ACNE

Fostex® degreases the skin and helps remove blackheads

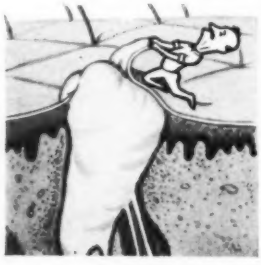


Fostex contains a combination of surface active agents (Sebulytic*) which:

◂ Completely emulsify excess oil so that it is quickly washed off the skin.



◂ Penetrate and soften comedones, unblocking the pores and facilitating removal of sebum plugs.



Fostex dries and peels the skin

◂ The Sebulytic base of Fostex dries and promotes peeling of the skin . . . actions enhanced by the keratolytic effects of micropulverized sulfur and salicylic acid.

*(Sodium lauryl sulfoacetate, sodium alkyl aryl polyether sulfonate, sodium dioctyl sulfosuccinate.)

Fostex is easy for your patients to use

FOSTEX CREAM
for therapeutic washing of skin in the initial phase of acne treatment, when maximum degreasing and peeling are desired.

FOSTEX CAKE
for maintenance therapy to keep skin dry and substantially free of comedones.

◂ Patients stop using soap on affected skin areas. Instead they use Fostex for therapeutic washing of the skin. The Fostex lather is massaged into the skin for 5 minutes—then rinse and dry.

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WESTWOOD *Pharmaceuticals*
Division of Foster-Milburn Co.
468 Dewitt Street • Buffalo 13, New York

for depression

▲Deprol▲†

Clinically confirmed in over 2,500 documented case histories[1,2]

CONFIRMED EFFICACY

Deprol ► acts promptly to control depression *without* stimulation

► restores natural sleep

► reduces depressive rumination and crying

DOCUMENTED SAFETY

Deprol is unlike amine-oxidase inhibitors

► does not adversely affect blood pressure or sexual function

► causes no excessive elation

► produces no liver toxicity

► does not interfere with other drug therapies

Deprol is unlike central nervous stimulants

► does not cause insomnia

► produces no amphetamine-like jitteriness

► does not depress appetite

► has no depression-producing aftereffects

► can be used freely in hypertension and in unstable personalities

Dosage: Usual starting dose is 1 tablet q.i.d. When necessary, this dose may be gradually increased up to 3 tablets q.i.d.

Composition: Each tablet contains 400 mg. meprobamate and 1 mg. 2-diethylaminoethyl benzilate hydrochloride (benactyzine HCl).

Supplied: Bottles of 50 scored tablets.

1. Alexander, L.: Chemotherapy of depression—Use of meprobamate combined with benactyzine (2-diethylaminoethyl benzilate) hydrochloride. J.A.M.A. 166:1019, March 1, 1958. 2. Current personal communications; in the files of Wallace Laboratories.

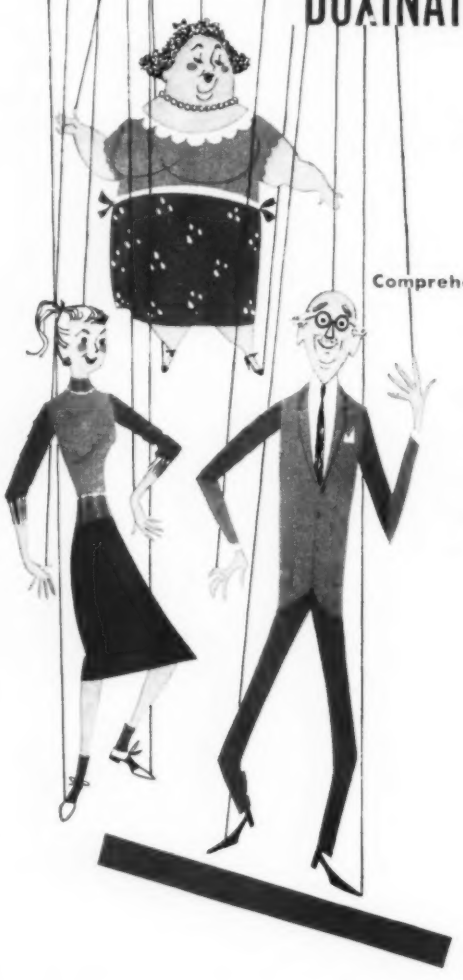
†TRADE MARK 10-7491

Literature and samples on request WALLACE LABORATORIES, *New Brunswick, N. J.*

COMPREHENSIVE CONTROL OF CONSTIPATION

PROVIDES SOFT STOOLS GENTLY STIMULATED TO EVACUATION

DOXINATE® with DANTHRON (Doxan)



— the original dioctyl sodium sulfosuccinate fecal softener combined with danthron, the non-irritating, non-habit forming laxative —

Comprehensive control of constipation with Doxan . . .

★ prevents fecal dehydration and gently stimulates the lower colon in functional constipation

★ synergistically provides, with a subclinical dosage, peristaltic action on a soft, "normal" intestinal content rather than on the hardened mass typical of constipation

★ results in soft stools gently stimulated to evacuation . . . and restores normal bowel habits

Doxinate with Danthron (Doxan) is supplied as brown, capsule-shaped tablets containing 60 mg. dioctyl sodium sulfosuccinate and 50 mg. 1,8-dihydroxyanthraquinone.

Usual adult dose: One or two capsule tablets at bedtime. Bottles of 30 and 100.

When fecal softening alone is indicated— Doxinate 240 mg.—provides optimal once-a-day dosage for maintenance therapy.

Doxinate is a registered trademark of Lloyd Brothers, Inc.

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CINCINNATI 3, OHIO

whenever
he
starts
to

CHEW

he's
ready
for

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New vitamin-mineral supplement
in delicious chocolate-like nuggets

There's nothing easier to give
or take–
than Delectavites.
A real treat . . .
the children's favorite . . .
tops with adults, too.

Each nugget contains:

Vitamin A	5,000 Units*
Vitamin D	1,000 Units*
Vitamin C	75 mg.
Vitamin E	2 Units†
Vitamin B-1	2.5 mg.
Vitamin B-2	2.5 mg.
Vitamin B-6	1 mg.
Vitamin B-12 Activity	3 mcg.
Panthenol	5 mg.
Nicotinamide	20 mg.
Folic Acid	0.1 mg.
Biotin	30 mcg.
Rutin	12 mg.
Calcium Carbonate	125 mg.
Boron	0.1 mg.
Cobalt	0.1 mg.
Fluorine	0.1 mg.
Iodine	0.2 mg.
Magnesium	3.0 mg.
Manganese	1.0 mg.
Molybdenum	1.0 mg.
Potassium	2.5 mg.

*U.S.P. UNITS †INT. UNITS

Dose: One Nugget per day
Supplied: Boxes of 30–one month's supply
Boxes of 90–three months' supply or family package.

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effective relief
of cough
and congestion

THE
pyraldine®
FAMILY

pyraldine®
Quiets the cough
Relieves allergy-caused congestion
Liquefies mucus and facilitates expectoration
Soothes the irritated pharnx

pyraldine® No. 2
Affords added mucosal decongestion

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With dextromethorphan

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A Summary Report on

CORTROPHIN®-ZINC

(Corticotropin-Alpha Zinc Hydroxide)

Description: A unique patented electrolytic process (developed by Organon research) produces a complex of *alpha* zinc hydroxide and corticotropin. This complex offers considerable advantages for practical ACTH therapy.

Characteristics: New Cortrophin-Zinc provides corticotropin of unsurpassed purity with low foreign protein content. This reduces the risk of sensitization reactions.

Since about 5% of the corticotropin is uncombined, onset of clinical response is rapid. But the balance, present as a complex of alpha zinc hydroxide, provides a prolonged action so that the effective time span of a single dose is usually several days. Injection of the new electrolytic Cortrophin-Zinc is virtually painless.

Pharmacology: A potent stimulator of cortical activity, Cortrophin-Zinc *does not depress* functioning of the suprarenal glands. Unlike the corticosteroids, adrenocorticotropic hormone arouses the adrenal glands to produce *natural* steroids in natural proportions. In a 5-year study of patients on ACTH therapy, no case of adrenal *or pituitary* depression or atrophy has been observed.

Because Cortrophin-Zinc is virtually painless on injection and its prolonged action obviates frequent injections, it is now practicable to use Cortrophin-Zinc in most of the indications where formerly reliance has been on corticosteroids. This freedom from apprehension of deleterious depressive effects permits clinical use of valuable hormone therapy on a broader scale than has been possible heretofore.

Clinical Uses and Dosage: The many published reports on the use of Cortrophin-Zinc as well as ACTH, in thousands of patients indicate its value in over 100 disorders. Most responsive have been: allergies and hypersensitivities, rheumatoid arthritis, bronchial asthma, serum sickness and inflammatory skin and eye diseases.

Dosage should be individualized, but generally initial control of symptoms is obtained with a single injection of 40 units of Cortrophin-Zinc daily, until control is evident. Maintenance dosage is generally 20 units (or less) twice a week.

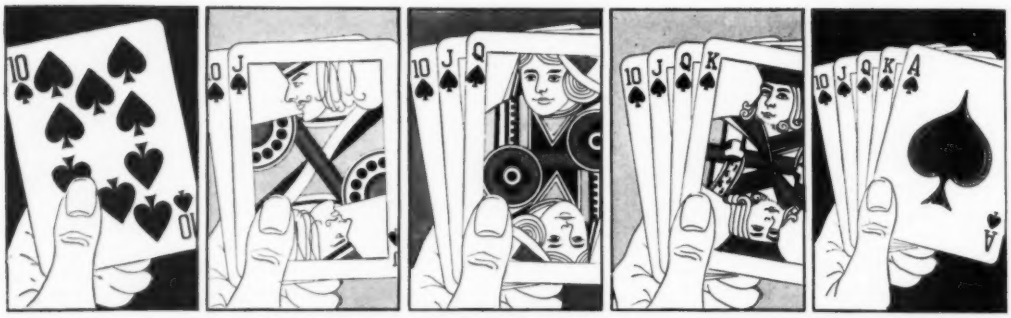
Use of Cortrophin-Zinc with oral steroids is now recommended as a safety measure to supply the important suprarenal stimulation and lessen the hazard of atrophy. Periodic use of Cortrophin-Zinc is advocated with all steroid analogs, such as cortisone, hydrocortisone, prednisone, prednisolone, methylprednisone, and triamcinolone.*

Supply: 5-cc vials containing 40 and 20 U.S.P. units of corticotropin per cc; 1-cc ampuls containing 40 and 20 U.S.P. units of corticotropin, with sterile disposable syringes.

*Write for complete literature and bibliography containing specific dosage schedules to:

Medical Department

ORGANON INC. · Orange, N. J.



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HYCOMINE®
Syrup

THE COMPLETE Rx FOR COUGH CONTROL

cough sedative / antihistamine / expectorant

- relieves cough and related symptoms in 15-20 minutes
- effective for 6 hours or longer • promotes expectoration
- rarely constipates • cherry-flavored

Each teaspoonful (5 cc.) of HYCOMINE contains:

Hycodan®		
Dihydrocodeinone Bitartrate (Warning: May be habit-forming)	5 mg.	6.5 mg.
Homatropine Methylbromide	1.5 mg.	
Pyrilamine Maleate		12.5 mg.
Ammonium Chloride		60 mg.
Sodium Citrate		85 mg.

Adult Dosage: one teaspoonful q. 6 h. May be habit-forming.
Federal law permits oral prescription.

Endo®

Literature on request
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NEW

new antibacterial
new chemical entity
new high in effectiveness
new low in side reactions

A NEW BRIGHT SPOT IN ANTIBACTERIAL THERAPY

Madribon

ROCHE

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CLINICAL BRIEFS
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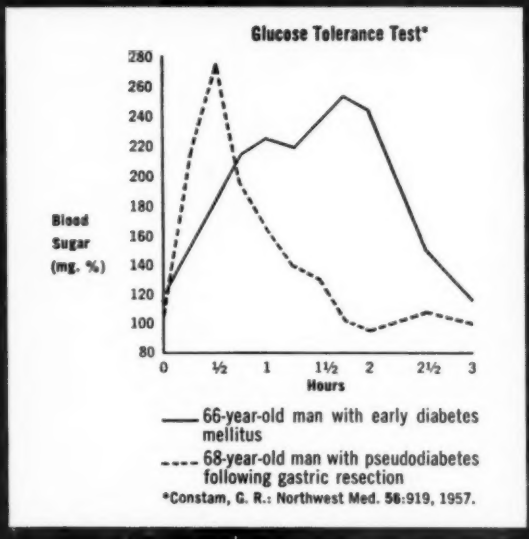

*Constam, G. R.: Northwest Med. 56:919, 1957.

besides diabetes, what diseases may cause symptoms of polyuria, polydipsia, increased fatigability and loss of weight?

Various renal diseases with isosthenuria, portal obstruction, functional dipsomania, hyperparathyroidism, acromegaly, primary aldosteronism, chronic mercury poisoning, hypervitaminoses A or D, Hand-Schüller-Christian lipoidosis, fructosuria, pentosuria and sucrosuria.*

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- standard blue-to-orange spectrum long familiar to diabetics
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NEW

realistic therapy in pneumonia

A 13-year-old girl with penicillin-resistant pneumonia received an initial dose of 1250 mg Madribon, followed by 625 mg daily. On the third day of Madribon treatment, the temperature returned to normal. X-rays showed marked improvement in the lung fields. She was discharged eight days later.[1]

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ROCHE

Madribon, a completely new antibacterial, shows wide-spectrum activity against many common gram-positive and gram-negative pathogens, including staphylococci, streptococci, pneumococci, E. coli, klebsiella and listeria.

Low dose, 24-hour action. "The use of Madribon was very simple...."[3] A single, low dose of Madribon produces peak blood concentrations within 4 hours, maintains them at near-constant level for the next 24 hours.[2,4]

Safer. The incidence of side effects with Madribon is less than 3% in more than 5000 cases. Those reported were relatively mild—dizziness, nausea and vomiting. Because Madribon is excreted primarily as a highly soluble glucuronide, there is little likelihood of crystalluria or kidney damage.

MADRIBON T.M. —brand of 2,4-dimethoxy-6-sulfanilamido-1,3-diazine

ROCHE—Reg. U. S. Pat. Off.

ROCHE LABORATORIES • *Division of Hoffmann-La Roche Inc* • *Nutley 10* • *N. J.*

Results with ". . . antacid therapy with DAA are essentially the same as . . . with potent anticholinergic drugs."

Alglyn®

Dihydroxy aluminum aminoacetate, N.N.R.

In recent years, a number of new synthetic anticholinergic drugs with numerous and varying side effects have been investigated for treatment of peptic ulcer. However, a double-blind study conducted recently by Cayer et al suggests that the use of such anticholinergic drugs is seldom necessary. The authors concluded that "The percentage of 'good to excellent' results obtained in patients on continuous long-term antacid therapy with DAA (74%) is essentially the same as that previously noted in ulcer patients treated under similar conditions with potent anticholinergic drugs alone."

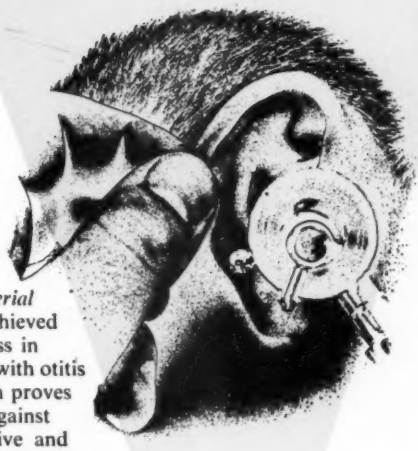
The authors' choice of dihydroxy aluminum aminoacetate (DAA) was based on the fact that "the tablet form of DAA (is) more active than a variety of straight aluminum hydroxide magmas." They further commented that "Because of the convenience of tablet medication as compared with the liquid gel—a convenience which in the use of other tablets is gained at the expense of therapeutic effectiveness—dihydroxy aluminum aminoacetate was used exclusively."

ALGLYN (dihydroxy aluminum aminoacetate) Tablets are supplied in bottles of 100 tablets (0.5 Gm. per tablet).

BRAYTEN PHARMACEUTICAL COMPANY • *Chattanooga 9, Tennessee*

NEW

realistic therapy in otitis media



The new antibacterial Madribon has achieved therapeutic success in 65 of 72 patients with otitis media.[1] Madribon proves highly effective against many gram-positive and gram-negative pathogens, including staphylococci, streptococci, pneumococci, E. coli, klebsiella and listeria.

A NEW BRIGHT SPOT IN ANTIBACTERIAL THERAPY

Low dose, 24-hour action. "The use of Madribon was very simple. . . ."[3] A single, low dose of Madribon produces peak blood concentrations within 4 hours, maintains them at near-constant level for the next 24 hours.[2,4]

Madribon

Safer. The incidence of side effects with Madribon is less than 3% in more than 5000 cases. Those reported were relatively mild—dizziness, nausea and vomiting. Because Madribon is excreted primarily as a highly soluble glucuronide, there is little likelihood of crystalluria or kidney damage.

MADRIBON T. M. —brand of 2,4-dimethoxy-6-sulfanilamido-1,3-diazine
ROCHE—Reg. U.S. Pat. Off.

ROCHE LABORATORIES • *Division of Hoffmann-La Roche Inc* • *Nutley 10* • *N. J.*

FAST-ACTING ORAL BROAD-SPECTRUM THERAPY.

The modern blue and yellow ACHROMYCIN V Capsules, combining equal parts of pure crystalline ACHROMYCIN Tetracycline HCl and Citric Acid, provide unsurpassed oral broad-spectrum therapy.

Speed of absorption adds new emphasis to the benefits of true broad-spectrum action, minimum side effects and wide range effectiveness that have established ACHROMYCIN as an antibiotic of choice for decisive control of infection.

REMEMBER THE _ WHEN SPECIFYING ACHROMYCIN V.

New blue and yellow capsules (sodium-free)—250 mg. with 250 mg. citric acid, and 100 mg., with 100 mg. citric acid.

ACHROMYCIN V dosage: Recommended basic oral dosage is 6-7 mg. per lb. body weight per day. In acute, severe infections often encountered in infants and children, the dose should be 12 mg. per lb. body weight per day. Dosage in the average adult should be 1 Gm. divided into four 250 mg. doses.

ACHROMYCIN* V CAPSULES

Tetracycline HCl and Citric Acid Lederle

LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY
Pearl River, New York

*Reg. U. S. Pat. Off.

NEW

realistic therapy in respiratory infections

A completely new antibacterial

Low dose, 24-hour action

Safer

References: 1. E. H. Townsend and A. Borgstedt, Paper read at the Sixth Annual Symposium on Antibiotics, Washington, D.C., October 15-17, 1958.

2. S. Ross, J. R. Puig and E. A. Zaremba, Paper read at the Sixth Annual Symposium on Antibiotics, Washington, D.C., October 15-17, 1958.

3. W. A. Leff, Paper read at the New Jersey Chapter of the American Federation for Clinical Research, East Orange, N. J., September 17, 1958.

4. W. P. Boger, Paper read at the Sixth Annual Symposium on Antibiotics, Washington, D.C., October 15-17, 1958.

A NEW BRIGHT SPOT IN ANTIBACTERIAL THERAPY

Madribon

ROCHE

DOSAGE		TABLETS initially	TABLETS q. 24 h.	SUSPENSION (teasp.) initially	SUSPENSION (teasp.) q. 24 h.
ADULTS:		2	1	4	2
CHILDREN:	20 lbs	½	¼	1	½
	40 lbs	1	½	2	1
	80 lbs	2	1	4	2

The above dosage should be doubled in severe infections requiring more intensive therapy. Continue therapy for 5 to 7 days, or until patient is asymptomatic for at least 48 hours.

Tablets, 0.5 Gm
Suspension, 0.25 Gm/teasp.

Caution: The usual precautions in sulfonamide therapy should be observed, including the maintenance of adequate fluid intake. If toxic reactions or blood dyscrasias occur, use of the drug should be discontinued. As is true of all sulfonamides, Madribon is probably contraindicated in premature infants.

MADRIBON T.M. — brand of 2,4-dimethoxy-6-sulfanilamido-1,3-diazine
ROCHE — Reg. U. S. Pat. Off.

ROCHE LABORATORIES • *Division of Hoffmann-La Roche Inc* • *Nutley 10* • *N. J.*

Proven

in over three years of clinical use
in over 600 clinical studies

Specific

FOR RELIEF OF ANXIETY
AND MUSCLE TENSION

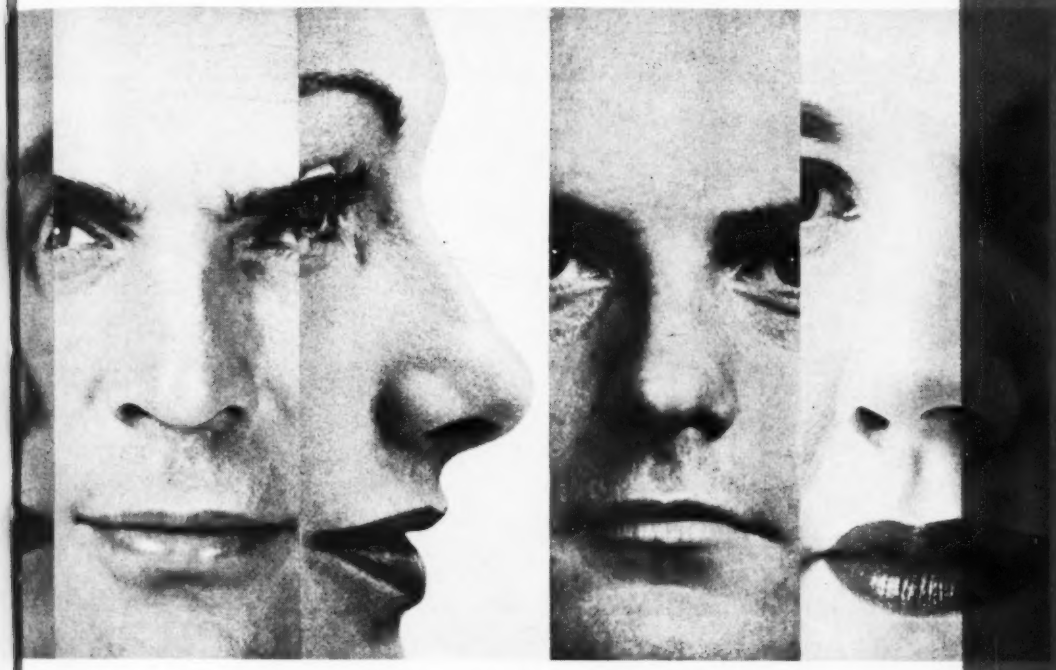
Selective

Does not interfere with autonomic function
Does not impair mental efficiency,
motor control, or normal behavior
Has not produced hypotension,
agranulocytosis or jaundice

MEPROBAMATE (WALLACE)
Miltown®
Supplied: 400 mg. scored tablets, 200 mg. sugar-coated tablets.
WALLACE LABORATORIES, New Brunswick, N. J.

CM-8043

knocks the "stuffing" out of congested noses



for seasonal coryza, nasopharyngitis, upper-respiratory congestion

METRETON NASAL SPRAY

METICORTELONE plus CHLOR-TRIMETON

- swift, safe relief without rebound
- prompt drainage...stops sneezing, itching, discharge
- no sympathomimetic effects
- safe for cardiac, hypertensive, pregnant and elderly patients

supplied: 15 cc. plastic squeeze bottle

for systemic control of allergies

METRETON TABLETS

METICORTEN and CHLOR-TRIMETON with ascorbic acid

topical control of ocular allergies

METRETON OPHTHALMIC SUSPENSION

METICORTELONE plus CHLOR-TRIMETON

METRETON,® brand of corticoid-antihistamine compound.
METICORTELONE,® brand of prednisolone.
METICORTEN,® brand of prednisone.
CHLOR-TRIMETON,® brand of chlorprophenpyridamine preparations.

SCHERING CORPORATION · BLOOMFIELD, NEW JERSEY

Schering

MT-J-118

*Compazine**

nausea and vomiting

—from virtually any cause

- in pregnancy—pre- and postoperative states—gastroenteritis—alcoholism—cancer and chronic diseases
- control is achieved with low dosage—usually 15 to 20 mg. daily—and often within a half hour after the first oral dose

'Compazine' is remarkable for its freedom from drowsiness. Patients carry on normal activities and often experience an actual alerting effect.

. . . for immediate control of severe vomiting:

Ampuls, 2 cc. (5 mg./cc.)

NEW: Multiple dose vials, 10 cc. (5 mg./cc.)

—always carry one in your bag

Also available:

Tablets, 5, 10 and 25 mg., in bottles of 50 and 500.

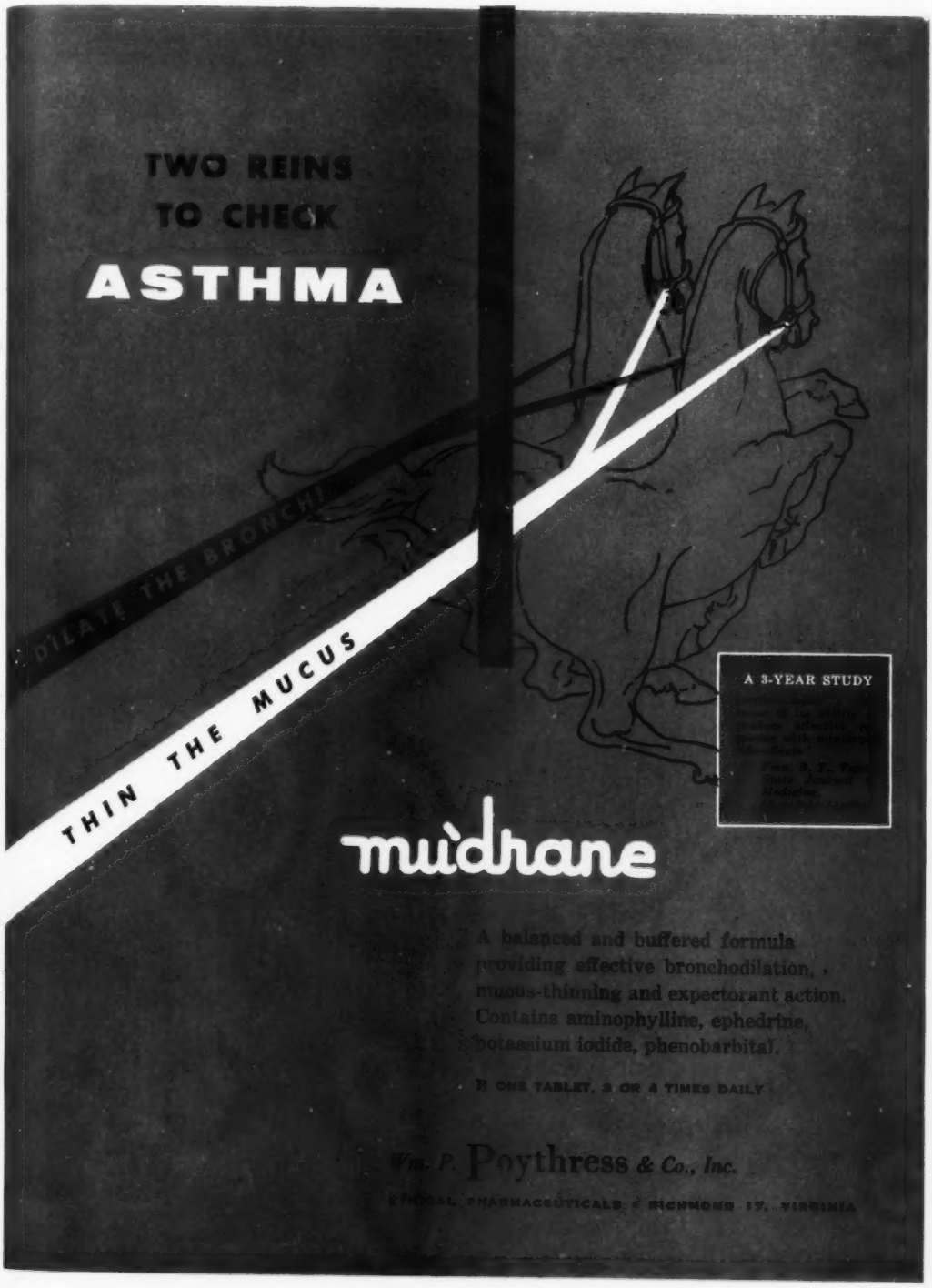
Spansule† *capsules*, 10, 15 and 30 mg., in bottles of 30 and 250.

Suppositories, 5 and 25 mg., in boxes of 6.

Syrup, 5 mg./teaspoonful (5 cc.), in 4 fl. oz. lightproof bottles.

Smith Kline & French Laboratories, Philadelphia

*T.M. Reg. U.S. Pat. Off. for prochlorperazine, S.K.F.
†T.M. Reg. U.S. Pat. Off. for sustained release capsules, S.K.F.


TWO REINS
TO CHECK
ASTHMA
DILATE THE BRONCHI
THIN THE MUCUS
A 3-YEAR STUDY
muìdrane
A balanced and buffered formula providing effective bronchodilation, mucous-thinning and expectorant action. Contains aminophylline, ephedrine, potassium iodide, phenobarbital.
ONE TABLET, 3 OR 4 TIMES DAILY
Wm. P. Poythress & Co., Inc.
ETHICAL PHARMACEUTICALS • RICHMOND 17, VIRGINIA

Faster rehabilitation in R

Joint inflammation and muscle spasm are the two elements most responsible for disability in rheumatic-arthritic disorders—and MEPROLONE is the one agent that treats both.

MEPROLONE suppresses the inflammatory process and simultaneously relieves aching and stiffness caused by muscle spasm, to provide greater therapeutic benefits and a shorter rehabilitation period than any single antirheumatic-antiarthritic agent.

MEPROLONE-2 is indicated in cases of severe involvement, yet often leads to a reduction of steroid dosage because of its muscle-relaxant action. When involvement is only moderately severe or mild, MEPROLONE-1 may be indicated.

SUPPLIED: Multiple Compressed Tablets in three formulas: MEPROLONE-2—2.0 mg. prednisolone, 200 mg. meprobamate and 200 mg. dried aluminum hydroxide gel (bottles of 100). MEPROLONE-1 supplies 1.0 mg. prednisolone in the same formula as MEPROLONE-2 (bottles of 100). MEPROLONE-5—5.0 mg. prednisolone, 400 mg. meprobamate and 200 mg. dried aluminum hydroxide gel (bottles of 30).

a

Because muscles move joints, both muscle spasm and joint inflammation must be considered in treating the rheumatic-arthritic patient . . .

MERCK SHARP & DOHME Division of MERCK & CO., INC., Philadelphia 1, Pa. MSD

in Rheumatoid Arthritis

multiple compressed tablets

MEPROLONE®

THE FIRST MEPROBAMATE-PREDNISOLONE THERAPY

b

MEPROLONE is the one antirheumatic-antiarthritic that exerts a simultaneous action to relax muscles in spasm and to suppress joint inflammation . . .

c

Therefore, MEPROLONE does more than any single agent to help the physician shorten the time between disability and employability.

MEPROLONE is a trade-mark of Merck & Co., Inc.

strengthens
fragile capillaries

in internal bleeding

capillary hemorrhage
in duodenal ulcer

. . . associated with abnormal capillary permeability and fragility in

peptic ulcer

ulcerative colitis

chronic nosebleed

purpura
(nonthrombocytopenic)

hemorrhagic cystitis

ecchymoses

menorrhagia

habitual and threatened abortion

orrhage
al ulcer

CVP®

C.V.P. helps diminish increased capillary permeability, fragility, and resultant bleeding by acting to maintain the integrity of the intercellular ground substance (cement) of capillary walls. C.V.P. is the original and exclusive water-soluble citrus bioflavonoid complex. Readily absorbed and utilized, C.V.P. is relatively free (due to special processing) of hesperidin, naringin and other comparatively insoluble and inactive flavonoids found in citrus.

Each capsule or teaspoonful (approx. 5 cc.) of syrup provides:

CITRUS BIOFLAVONOID COMPOUND	100 mg.
ASCORBIC ACID (vitamin C)	100 mg.

Bottles of 100, 500 and 1000 capsules; 4 oz., 16 oz. and gallon syrup

samples (capsules or syrup) and literature from . . .

u. s. vitamin corporation • PHARMACEUTICALS
(Arlington-Funk Laboratories, division) • 250 East 43rd Street, New York 17, N. Y.

Bed of Digitalis purpurea
with Campanula 'Canterbury Bells' in foreground

Not far from here are manufactured
from the powdered leaf
Pil. Digitalis (Davies, Rose)
0.1 Gram (1½ grains) or 1 U.S.P. Digitalis Unit.
They are physiologically standardized,
with an expiration date on each package.
Being Digitalis in its completeness,
this preparation comprises the
entire therapeutic value of the drug.
It provides the physician with a safe and effective
means of digitalizing the cardiac patient
and of maintaining the necessary saturation.
Security lies in prescribing the
"original bottle of 35 pills, Davies, Rose."

Clinical samples and literature sent to physicians on request

Davies, Rose & Co., Ltd. Boston 18, Mass.

You, Doctor, are not the only disappointed person when skeletal muscle relaxants don't work—or cause GI distress, drowsiness and dizziness—

. . . the person
even more disappointed
and unhappy
is ***your patient***

Sinaxar (STYRAMATE, ARMOUR)
2-hydroxy 2-phenylethyl carbamate

a new, different chemical structure—unlike any other skeletal muscle relaxant currently available—is

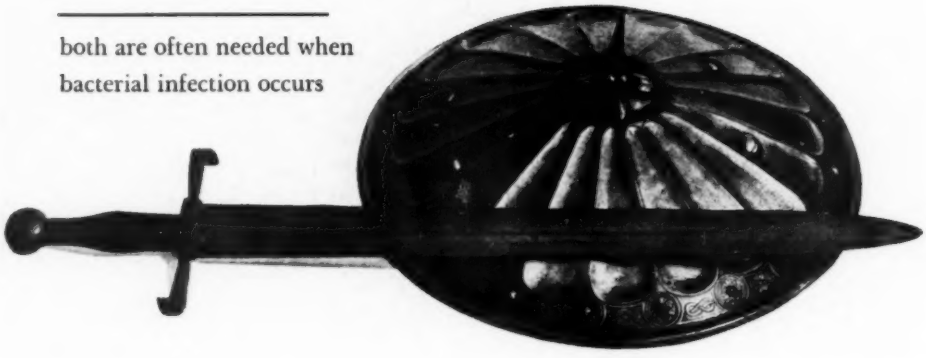
- consistently effective in the majority of cases
- long acting: no fleeting effects
- free of adverse side effects frequently encountered with tranquilizers and other muscle relaxants

Dosage: One or two tablets t.i.d.
Supplied: 200 mg. tablets in bottles of 50.
Indications: Low back ache; muscle strains and pains; frozen shoulder; stiff neck; bursitis; rheumatic joint pains.

ARMOUR PHARMACEUTICAL COMPANY
KANKAKEE, ILLINOIS

▪ prompt, aggressive
antibiotic action
▪ a reliable defense against
monilial complications

both are often needed when
bacterial infection occurs



for a direct strike at infection
Mysteclin-V contains tetracycline phosphate complex

It provides a direct strike at all tetracycline-susceptible organisms (most pathogenic bacteria, certain rickettsias, certain large viruses, and Endamoeba histolytica).

It provides the new chemical form of the world's most widely prescribed broad spectrum antibiotic.

It provides unsurpassed initial blood levels – higher and faster than older forms of tetracycline – for the most rapid transport of the antibiotic to the site of infection.

for protection against monilial complications
Mysteclin-V contains Mycostatin

It provides the antifungal antibiotic, first tested and clinically confirmed by Squibb, with specific action against Candida (Monilia) albicans.

It acts to prevent the monilial overgrowth which frequently occurs whenever tetracycline or any other broad spectrum antibiotic is used.

It protects your patient against antibiotic-induced intestinal moniliasis and its complications, including vaginal and anogenital moniliasis, even potentially fatal systemic moniliasis.

MYSTECLIN-V

Squibb Tetracycline Phosphate Complex (Sumycin) and Nystatin (Mycostatin)

Capsules *(250 mg./250,000 u.), bottles of 16 and 100.* Half-strength Capsules *(125 mg./125,000 u.), bottles of 16 and 100.*
Suspension *(125 mg./125,000 u. per 5 cc.) 60 cc. bottles.* Pediatric Drops *(100 mg./100,000 u. per cc.). 10 cc. dropper bottles.*

SQUIBB *Squibb Quality — the Priceless Ingredient*

'MYSTECLIN'®, 'SUMYCIN'®, AND 'MYCOSTATIN'® ARE SQUIBB TRADEMARKS

ACHROCIDIN*

TETRACYCLINE-ANTIHISTAMINE-ANALGESIC COMPOUND LEDERLE

A versatile, well-balanced formula for treating common upper respiratory infections, particularly during respiratory epidemics; when bacterial complications are observed or are likely; when patient's history is positive for recurrent otitic, pulmonary, nephritic, or rheumatic involvement.

CHECKS SYMPTOMS: Includes traditional components for rapid relief of the traditional nonspecific nasopharyngitis, symptoms of malaise, chilly sensations, inconstant low-grade fever, headache, muscular pain, pharyngeal and nasal discharge.

Available on prescription only.

Adult dosage for ACHROCIDIN Tablets and new caffeine-free ACHROCIDIN Syrup is two tablets or teaspoonfuls of syrup three or four times daily. Dosage for children according to weight and age.

TABLETS *(sugar coated)*
Each Tablet contains:

ACHROMYCIN® Tetracycline	125 mg.
Phenacetin	120 mg.
Caffeine	30 mg.
Salicylamide	150 mg.
Chlorothen Citrate	25 mg.

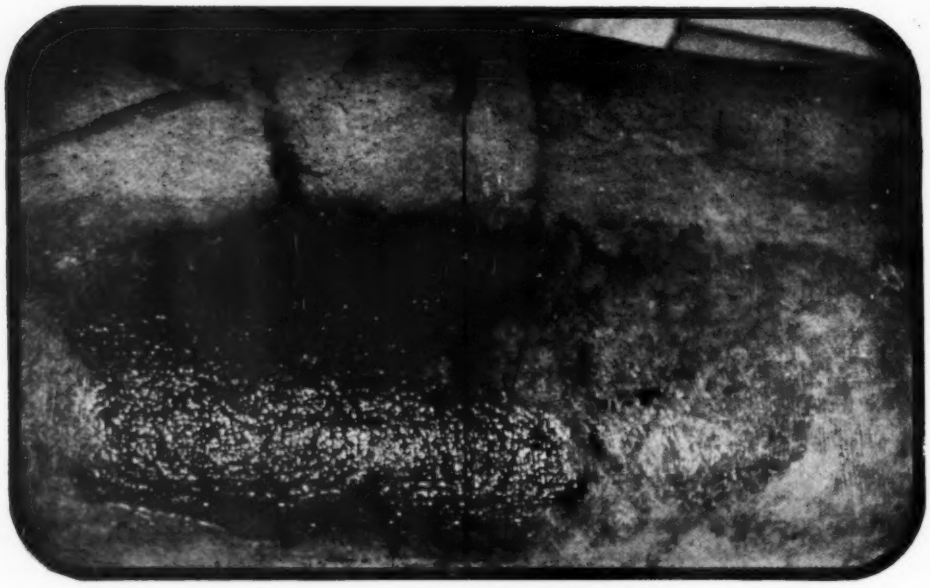
Bottles of 24 and 100.

SYRUP *(lemon-lime flavored)*
Each teaspoonful (5 cc.) contains:

ACHROMYCIN® Tetracycline equivalent to tetracycline HCl	125 mg.
Phenacetin	120 mg.
Salicylamide	150 mg.
Ascorbic Acid (C)	25 mg.
Pyrilamine Maleate	15 mg.
Methylparaben	4 mg.
Propylparaben	1 mg.

Bottle of 4 oz.

Lederle LEDERLE LABORATORIES, a Division of AMERICAN CYANAMID COMPANY, Pearl River, New York
*Reg. U.S. Pat. Off.



Skin graft donor site after 2 weeks' treatment with ...

petrolatum gauze—still largely granulation tissue | FURACIN gauze—completely epithelialized

OBJECTIVE EVIDENCE OF SUPERIOR WOUND HEALING

was obtained in a quantitative study of 50 donor sites, each dressed half with FURACIN gauze, half with petrolatum gauze. Use of antibacterial FURACIN Soluble Dressing, with its water-soluble base, resulted in more rapid and complete epithelialization. No tissue maceration occurred in FURACIN-treated areas. There was no sensitization.

Jeffords, J. V., and Hagerty, R. F.: Ann. Surg. *145*:169, 1957.

FURACIN®. . . brand of nitrofurazone
the broad-range bactericide that is *gentle to tissues*

spread FURACIN Soluble Dressing: FURACIN 0.2% in water-soluble ointment-like base of polyethylene glycols.

sprinkle FURACIN Soluble Powder: FURACIN 0.2% in powder base of water-soluble polyethylene glycols. Shaker-top vial.

spray FURACIN Solution: FURACIN 0.2% in liquid vehicle of polyethylene glycols 65%, wetting agent 0.3% and water.

EATON LABORATORIES, NORWICH, N.Y.

Nitrofurans—a NEW *class of antimicrobials—neither antibiotics nor sulfonamides*

which women...

and when...

need

iron therapy?

Many clinicians agree that the normal woman of child-bearing age requires iron therapy for a month or six weeks of *each* year.

Iron-deficiency anemia, usually identified as hypochromic microcytic anemia, is seen in most age groups, from the adolescent to the senior members.

For the treatment of these common anemias, Livitamin offers *peptonized* iron—virtually predigested, well absorbed, and less irritating than other forms. The Livitamin formula, which contains the B complex, provides integrated therapy to normalize the blood picture.

Formula: Each fluidounce contains:

Iron peptonized (Equiv. in elemental iron to 71 mg.)	420 mg.
Manganese citrate, soluble	158 mg.
Thiamine hydrochloride	10 mg.
Riboflavin	10 mg.
Vitamin B_{12} Activity (derived from Cobalamin conc.)	20 mcg.
Nicotinamide	50 mg.
Pyridoxine hydrochloride	1 mg.
Pantothenic acid	5 mg.
Liver fraction 1	2 Gm.
Rice bran extract	1 Gm.
Inositol	30 mg.
Choline	60 mg.

LIVITAMIN®

with Peptonized Iron

The S. E. MASSENGILL Company BRISTOL, TENNESSEE • NEW YORK • KANSAS CITY • SAN FRANCISCO

To ensure desired therapeutic response — look to peptonized iron

CURRENT STUDIES* SHOW PEPTONIZED IRON

One-third as toxic as ferrous sulfate.

Absorbed as well as ferrous sulfate.

Non-astringent.

Free from tendencies to disturb digestion. (One-tenth as irritating to the gastric mucosa as ferrous sulfate.)

More rapid response in iron-deficient anemias.

*Keith, J.H.: Utilization and Toxicity of Peptonized Iron and Ferrous Sulfate, Am. J. Clin. Nutrition 7:35 (Jan.-Feb., 1957).

LIVITAMIN®

with Peptonized Iron

The S. E. MASSENGILL Company BRISTOL, TENNESSEE • NEW YORK • KANSAS CITY • SAN FRANCISCO

SOME QUESTIONS AND ANSWERS on Use of PLAQUENIL with Other Drugs in Rheumatoid Arthritis

1. **May Plaquenil be used concomitantly with steroids and salicylates?**

   Yes. Tolerance to the three drugs when used together is not altered.

2. **When may steroid medication be reduced after initiation of Plaquenil treatment?**

   Since the beneficial effects of Plaquenil therapy are not noted for a period of at least four to six weeks, full maintenance dosage of the steroid should be continued during this period of time. Steroid therapy thereafter may be gradually reduced.

3. **May steroid therapy be withdrawn abruptly upon institution of Plaquenil therapy?**

   No, except when steroids have been administered for a period of about five days or less. When steroids have been given for longer periods, abrupt withdrawal is contraindicated to prevent the possibility of adrenocortical insufficiency.

4. **How may steroid medication be reduced gradually?**

   When the gradual reduction of steroid dosage is indicated, this may be accomplished by reducing every four or five days the dose of cortisone by no more than 5 to 15 mg., of hydrocortisone 5 to 10 mg., and of prednisolone and prednisone 2.5 to 5 mg.

5. **May salicylate medication be reduced gradually or withdrawn abruptly during Plaquenil therapy?**

   Yes. Unlike the steroids, there is no danger attending the abrupt withdrawal of salicylates. However, a gradual reduction of dosage is usually employed as the need for adjunctive analgesia diminishes.

• *Write for Booklet* •

Plaquenil® SULFATE

SIDE EFFECTS MARKEDLY REDUCED

Pharmacologic toxicity (MLD) approximately 2.5% that of chloroquine

Remarkably effective in

RHEUMATOID ARTHRITIS

"...Plaquenil is decidedly less toxic and better tolerated by the average patient, even in high dosage, than is chloroquine."[1]

DOSE: *Initial*—400 to 600 mg. (1 tablet 2 or 3 times daily)
Maintenance—200 to 400 mg. (1 or 2 tablets) daily.
Onset of effect is slow, requiring at least four to twelve weeks to become apparent. For optimal results or least six months' therapy is advisable.

SUPPLIED: Tablets of 200 mg., bottles of 100.

Winthrop LABORATORIES NEW YORK 18, N. Y.

for fever and pain / in infants and children

when your little patient

is burning with fever.....

Tempra®

Acetaminophen, Mead Johnson

syrup • drops

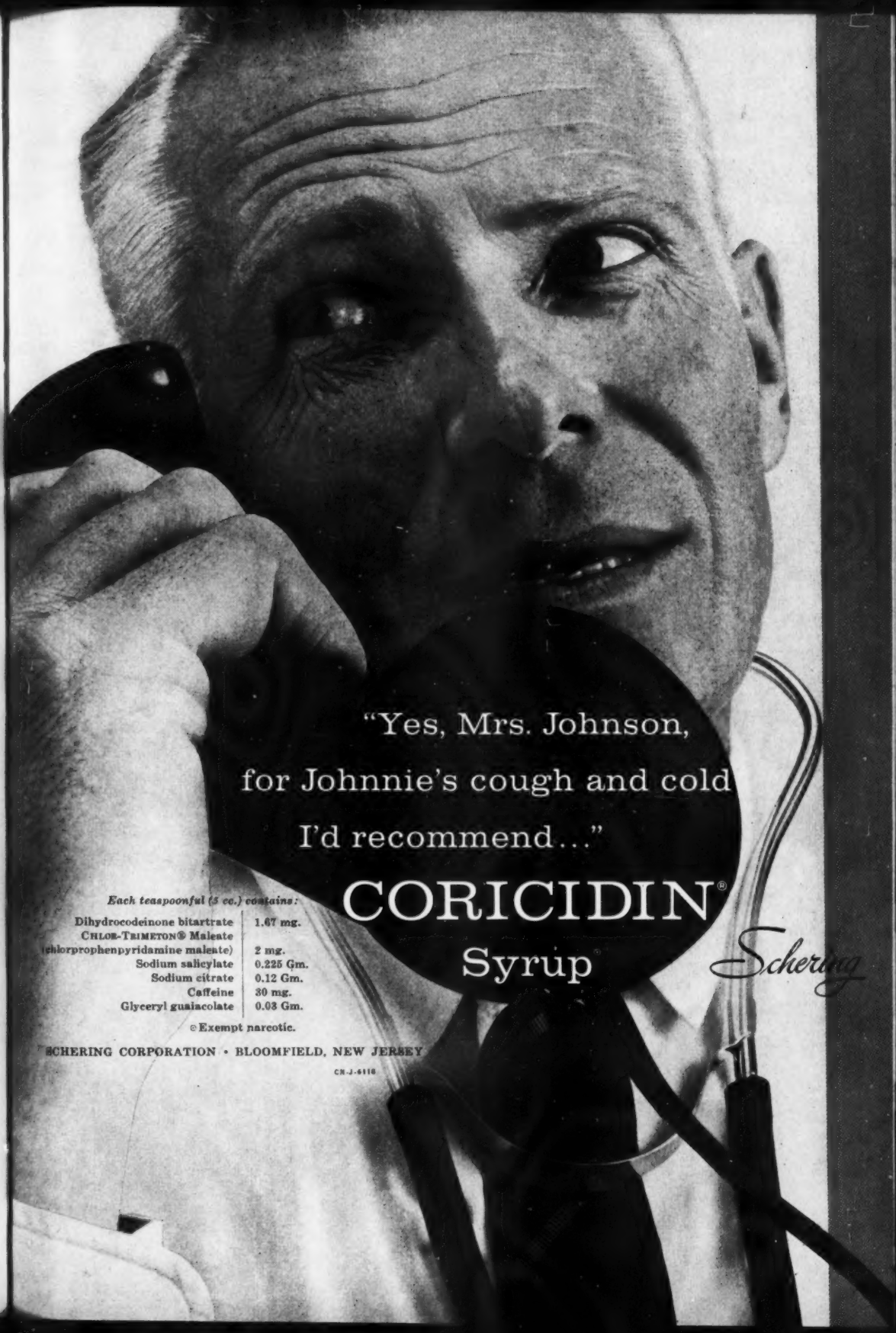
brings relief quickly...conveniently

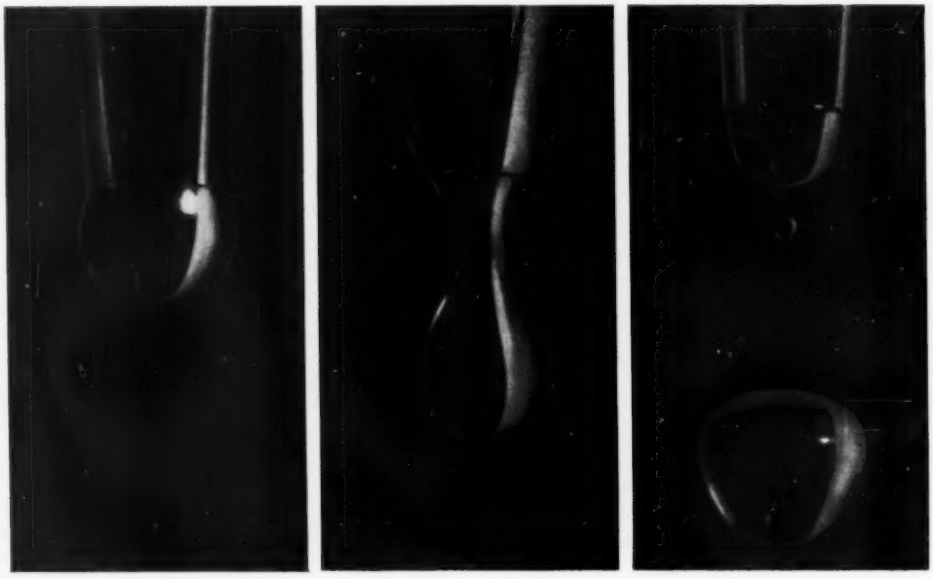
- ___ safe
- ___ well tolerated
- ___ easy to give
- ___ tastes good

Mead Johnson

Symbol of service in medicine

TE603


"Yes, Mrs. Johnson,
for Johnnie's cough and cold
I'd recommend..."
CORICIDIN®
Syrup
Schering
Each teaspoonful (5 cc.) contains:
Dihydrocodeinone bitartrate | 1.67 mg.
CHLOR-TRIMETON® Maleate (chlorprophenpyridamine maleate) | 2 mg.
Sodium salicylate | 0.225 Gm.
Sodium citrate | 0.12 Gm.
Caffeine | 30 mg.
Glyceryl guaiacolate | 0.03 Gm.
© Exempt narcotic.
SCHERING CORPORATION • BLOOMFIELD, NEW JERSEY
CN-J-6118



In Biliary Distress

ZANCHOL®

Improves Flow and Color of Bile

Zanchol (brand of florantyrone), a distinct chemical entity unrelated to the bile salts, provides the medical profession with a new and potent hydrocholeretic for treating disorders of the biliary tract.

The high degree of therapeutic activity of this new compound and its negligible side reactions yield distinct clinical advantages.

- Zanchol produces a bile low in sediment.
- Zanchol enhances the abstergent quality of bile.
- Zanchol produces a deep, brilliant green bile, regardless of its original color, suggesting improved hepatic function.
- Zanchol improves the flow and quantity of bile without increasing total bile solids.

Bile with these qualities minimizes biliary stasis, reduces sediment and debris in the bile ducts and discourages the ascent of infection.

For these reasons ZANCHOL has shown itself to be a highly valuable agent in chronic cholecystitis, cholangitis and care of patients following cholecystectomy.

Administration: One tablet three or four times a day. Zanchol is supplied in tablets of 250 mg. each. G. D. Searle & Co., Chicago 80, Illinois. Research in the Service of Medicine.

SEARLE

HE NEEDN'T BE HIGH-STRUNG

WEIGHT REDUCTION: Obese patients may resist dieting because they fear losing the emotional security often involved in overeating. **AMBAR** helps them hold the diet line by giving them a more alert, brighter outlook. **WITHOUT JITTERS:** Methamphetamine, a potent **CNS** augmenter, produces less cardiovascular effect than amphetamine. In **AMBAR** it is combined with just enough phenobarbital to prevent overstimulation. **AMBAR EXTENTABS** provide 10-12 hours of appetite suppression in one controlled-release, extended-action tablet: methamphetamine hydrochloride, 10.0 mg.; phenobarbital (1 gr.) 64.8 mg. **AMBAR TABLETS** for conventional dosage or intermittent therapy contain methamphetamine hydrochloride, 3.33 mg.; phenobarbital (1/3 gr.) 21.6 mg. **A. H. ROBINS COMPANY, INC.**, Richmond, Virginia, Ethical Pharmaceuticals of Merit Since 1878

WEIGHT REDUCTION WITHOUT JITTERS AMBAR™ Robins

methamphetamine and phenobarbital
TABLETS AND EXTENTABS®

Now available
NEW AMBAR #2
EXTENTABS
(METHAMPHETAMINE 15 mg., PHENOBARBITAL 1 gr.)
for patients who
require higher
methamphetamine
dosage

PREVENT
both cause and fear of
ANGINA ATTACKS

proven safety for long-term use

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1. McKenna, C. J.: Am. Pract. & Digest Treat. 6:417, 1955. 2. Moyer, J. H.: M. Clin. North America, March, 1957, p. 405.

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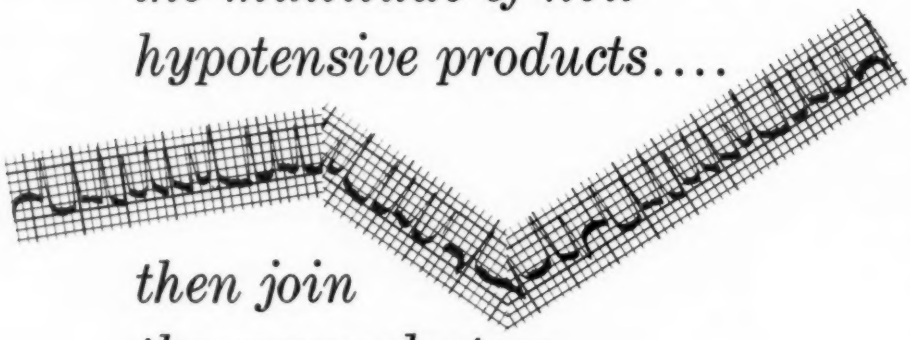

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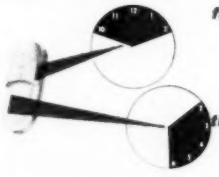

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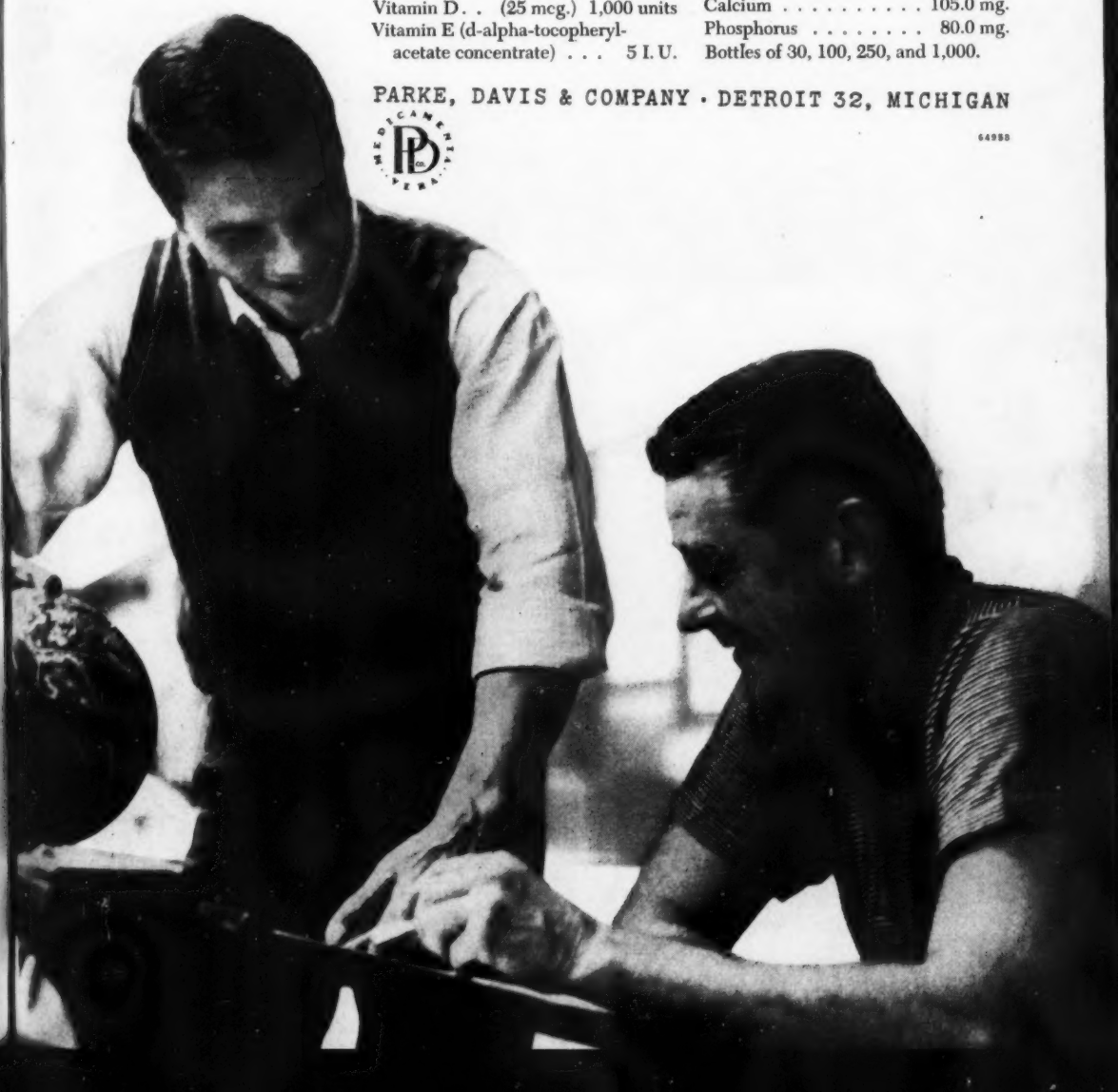

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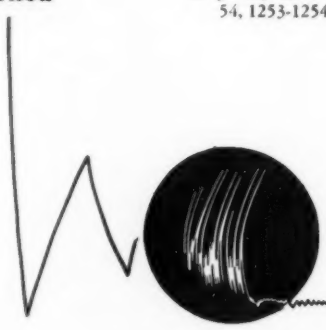

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Southern Medical Journal

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December 1958

Delay by Physician and Patient in the Diagnosis and Treatment of Pelvic Cancer*

CHARLES E. FLOWERS, JR., M.D., ROBERT A. ROSS, M.D., and NANCY L. PRITCHETT, A.B.,† *Chapel Hill, N. C.*

Here are statistics the doctor should take to heart. How often has he endangered the woman's life by failing to do a pelvic examination or in disregarding symptoms related to the pelvis.

A PHYSICIAN HAS MANY OBLIGATIONS to his patients and his community. He is expected to provide his patients with many types of professional skills and advice in times of illness. But he is further obligated to educate his patients in the fundamentals of preventive medicine, correct their mistaken ideas concerning diagnosis and treatment of various diseases, and help them maintain good health.

Patients also have certain obligations concerning their own health. They should understand basic precepts of good health and obtain sound professional advice by discussing health problems with their physicians. They should exercise reasonable judgment in assessing their need for medical care and should meticulously carry out their physician's advice and counseling.

When a physician practices medicine according to the best medical precepts and receives complete cooperation of the patient, the patient is afforded the best medical care that is available. However, when the physician fails to practice good therapeutic and preventive medicine or his patients fail to exercise reasonable medical judgment and heed professional advice, an illness may become unduly prolonged, expensive or even fatal.

Each year yields an increasing number of biologic facts concerning all phases of medicine. But the basic etiology of cancer remains obscure. It is important therefore that we utilize to the fullest extent all that is known concerning the etiology, diagnosis and treatment of malignant diseases.

At present, the available facts concerning cancer exceed the utilization of this knowledge by physicians and patients. This is represented in patients failing to report symptoms of cancer and physicians failing to promptly diagnose the disease and institute treatment.[1-6] The American Cancer Society is undoubtedly correct when it states that 50 per cent of those who now die of cancer could be saved if patients and physicians would utilize all of the available knowledge of the disease. This is particularly true of pelvic cancer since the majority of the cases can be diagnosed at the time of an annual physical examination.

Reason for the Study

Five hundred and sixty-one patients with pelvic cancer have been treated at the North Carolina Memorial Hospital since its opening five years ago. As these patients have been evaluated by detailed histories, physical examinations, and laboratory studies, it has

*Read before the Section on Gynecology, Southern Medical Association, Fifty-First Annual Meeting, Miami Beach, Fla., November 11-14, 1957.

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This study was supported in part by the North Carolina Division of the American Cancer Society.

TABLE 1

	Patients Interviewed	*Deceased Patients Chart Reviewed*	*Total*
Carcinoma cervix Stage O	14	2	16
Carcinoma cervix Stage I	28	5	33
Carcinoma cervix Stage II	37	15	52
Carcinoma cervix Stage III	12	6	18
Carcinoma cervix Stage IV	6	21	27
Carcinoma of the endometrium	16	9	25
Carcinoma of the ovary	3	8	11
Carcinoma of the vulva-vagina	5	4	9
Total	121	70	191

Deaths in Stage O were not due to carcinoma of the cervix.

been alarming to find the majority of the patients had advanced cancer. It has been evident that almost none of the patients had been advised by their physicians to have annual physical examinations. There has been an inordinate amount of neglect by patients in reporting symptoms of pelvic cancer to their physicians. There has been an unfortunately large incidence of delay by physicians in establishing the diagnosis of pelvic cancer and instituting treatment.

This study was made to evaluate the magnitude of the problem, ascertain the causes and attempt to provide remedial measures.

Method of Study

During a four month period each patient with pelvic cancer who was seen in the gynecologic clinic or admitted to the North Carolina Memorial Hospital was interviewed. In addition, the charts of all patients who had died of pelvic cancer were reviewed. Patients were not selected and every effort was made to obtain accurate information. Indefinite or questionably accurate data was not used. The data was recorded on a two page interview sheet. The questions were in detail and concerned the past gynecologic history, cancer education, the present illness, and a careful evaluation of all phases of patient and physician delay.

The Philadelphia Committee's criteria for diagnosing pelvic cancer delay by patient and physician were used.[1] Delay by physician is defined as a lapse of more than one month between the patient's first visit and the establishment of a proper diagnosis by a physician. Delay by the patient is defined as a lapse of three or more months between the occurrence of the first symptoms of pelvic cancer and the first visit to a physician's office.

Results of the Study

Tables 1 and 2 show the general distribution of the cases studied. It is evident that the lowest parity and the highest average age occurred in patients with carcinoma of the endometrium. The number of cases of carcinoma of the ovary, vulva, and vagina is small. They are included in the study, however, since they represent important aspects of delay by patient and physician in diagnosis and treatment.

Tables 3 and 4 give the percentages of delay by patient and physician, as well as their average times in months. It is evident that the greatest delay in establishing the diagnosis occurred in Stages III and IV in carcinoma of the cervix. It is likewise evident that the least delay occurred in early carcinoma of the cervix Stages O and I.

This is particularly well illustrated by the data from the committee for the study of pelvic cancer of Maryland.[7] This data has added significance when it is recalled that the 5 year cure of Stage O approaches 100 per cent and the 5 year cure of Stage IV approaches 0 per cent. It is particularly distressing to note that the average period of delay for all carcinoma of the cervix was 19 months,—almost 2 years (Table 5).

TABLE 2

TYPE OF CARCINOMA ACCORDING TO AGE, PARITY, RACE AND RESIDENCE

	Average Age	*Average Parity*	*Per Cent White*	*Per Cent Nonwhite*	*Per Cent Rural*	*Per Cent Urban*
Carcinoma of the cervix	48	4.7	56	44	59	41
Carcinoma of the endometrium	54	1.6	60	40	54	46
Carcinoma of the ovary	43	2.3	36	64	40	60
Carcinoma vulva-vagina	53	3.6	78	22	63	37

TABLE 3

PATIENT AND PHYSICIAN DELAY ACCORDING TO TYPE OF DISEASES

	Per Cent No Delay	Per Cent Patient Delay	Average Months Patient Delay	Per Cent Physician Delay	Average Months Physician Delay	Per Cent Patient and Physician Delay	Average Month Patient and Physician Delay
Carcinoma cervix Stage O	49	38	13	13	3	0	0
Carcinoma cervix Stage I	30	46	25	15	11	9	20
Carcinoma cervix Stage II	29	51	17	19	8	21	17
Carcinoma cervix Stage III	10	50	17	30	10	10	18
Carcinoma cervix Stage IV	10	60	20	15	14	15	25
Total Carcinoma cervix	25	42	18	19	9	14	18
Carcinoma endometrium	29	40	10	13	18	18	14
Carcinoma ovary	64	0	0	9	12	27	16
Carcinoma vulva-vagina	25	38	16	12	34	25	29

TABLE 4

	PATIENT DELAY IN MONTHS					PHYSICIAN DELAY IN MONTHS				
	0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12 and over	0-.9	1.0-2.9	3.0-5.9	6.0-8.9	9.0-11.9	12 and over
Carcinoma cervix Stage O	60.0	20.0	20.0			87.5		12.5			
Carcinoma cervix Stage I	43.8	28.1	9.4		18.8	70.4		7.40	14.8		7.40
Carcinoma cervix Stage II	45.7	19.6	15.2		19.6	54.3	13.0	17.4	6.5		8.7
Carcinoma cervix Stage III	38.9	11.1	16.7		33.3	52.9		5.9	17.6	5.9	17.6
Carcinoma cervix Stage IV	36.0	12.0	28.0	24.0		52.4		9.5	4.8		33.3
Carcinoma endometrium	43.5	21.7	17.4		17.4	68.2	4.5	18.2		9.1	
Carcinoma ovary	100.0					60.0			20.0	10.0	
Carcinoma vulva-vagina	37.5	12.5	12.5		37.5	62.5			12.5		25.0

Delay in Carcinoma of the Cervix

The reasons for delay by the patient, physician's errors, and the primary factors responsible for patients having advanced cancer are considered in table 6.

It is evident that increased efforts must be made to acquaint patients with the salient problems of carcinoma of the cervix. A common and serious misconception among patients is that any abnormal bleeding in the fifth and sixth decades of life is physiologic and benign. This idea is accepted widely by patients, and alarmingly frequent by physicians. In 19 instances a patient was told by a physician, who did not do a pelvic examination, that her symptoms were benign.

Denial and fear play a big role in delay by the patient. The role of psychologic mechanisms in pelvic cancer have been reported by Sandifer and Pritchett[8] in this material and in another series by Shands.[9] Only through well-organized educational programs by physicians and The American Cancer Society can the patient's ignorance of cancer and her denial of the disease be eliminated.

Another misconception of patients is that cancer must cause pain. The fact that symptoms of cancer were not associated with pain caused 7 patients to delay in seeking medical advice. Table 7 shows that the least delay by the patient occurred when a symptom of cancer was pain. However, such major symptoms as postmenopausal bleeding, intermenstrual bleeding, postcoital bleeding and abnormal vaginal secretion were taken less seriously.

Physicians committed grave errors of omission and commission in the treatment of carcinoma of the cervix. In 19 cases physicians failed to do a pelvic examination when the patient presented symptoms of cancer. In 10 instances a pelvic examination was performed, but smears and biopsies were not obtained. There were 3 cases in which the physician delayed the pelvic examination because of bleeding. In 2 instances a pelvic examination was not done during pregnancy, and in one case a D and C and conization were not used

TABLE 5

PERCENTAGE NO DELAY
CARCINOMA OF THE CERVIX

	Memorial Hospital North Carolina	Baltimore Committe
In situ	49	84
I	30	41
II	29	22
III	10	15
IV	10	7

Baltimore data based on 950 cases. N. C. Memorial Hospital data based on 146 cases. Appreciation is expressed to Dr. C. Bernard Brack for this data.

TABLE 6

DELAY BY PATIENT, PHYSICIAN'S ERRORS AND PRIMARY FACTORS FOR ADVANCED CANCER IN STAGES I, II, III AND IV CARCINOMA OF THE CERVIX

Reason for Patient's Delay		*Physician's Errors*		*Primary Factors for Advanced Cancer*	
Believed bleeding due to "change of life"	31	Symptoms diagnosed as benign lesion without pelvic examination	19	Failure to have annual examination	70
Denial or fear	16	Pelvic examination performed but no smear or biopsy	10	Physical examination patient delay	21
Symptoms not associated with pain	7	Hysterectomy performed in presence of cancer (no smear or biopsy)	8	Failure of physician to perform pelvic examination when symptoms of cancer present	16
Ignorance of cancer	8	Failure to perform pelvic examination because of bleeding	3	Pelvic examination performed by no biopsy or smears	10
Would not submit to pelvic examination while bleeding	4	Failure to perform pelvic examination during pregnancy	2	Hysterectomy performed in presence of cancer (no smear or biopsy prior to operation)	8
Financial	2	Failure to do D&C and conization after suspicious smear	1	Failure to perform pelvic examination during pregnancy	2
				Incorrect pathologic diagnosis	1

to establish a definitive diagnosis after a suspicious smear had been obtained.

In 8 cases another serious error was made by the physician. Hysterectomy was done without first taking a smear or biopsy. The uterus is a receptacle for radium; its absence materially reduces the amount of radiation that can be given.[10] There is likewise a spread of the tumor at the time of the incomplete operation.

The real effect of delay by patient and physician in carcinoma of the cervix was assessed by arbitrarily setting 6 months as the important period of delay in Stage I and 12 months or more as the important period of delay in Stages II, III, and IV. If the patient or physician delayed in reporting or establishing the diagnosis of pelvic cancer for these periods of time, the primary responsibility was laid upon them.

It is evident that in 130 cases of Stage I to Stage IV carcinoma of the cervix (Table 6), there were 70 (54%) cases in which there were no real symptoms of the disease to cause the patient to consult a physician. These cases could only have been prevented by annual physical examinations. In 21 cases (16%) the patient's neglect was responsible for her advanced cancer. In 37, or 30% of the cases, the physicians had the opportunity to diagnose the disease at an earlier stage but failed to do so.

Delay in Carcinoma of the Endometrium

The importance of delay by the patient and physician in carcinoma of the endometrium is more difficult to evaluate than carcinoma of the cervix. Symptoms often do not occur until the disease is far advanced. Moreover, negative smears or cervical biopsies may be obtained in the presence of cancer of the corpus. Negative smears are less likely to be obtained if a sound is passed into the uterus prior to taking the smear, and one slide is made of endocervical material.

It is important to remember that 25% of all instances of postmenopausal bleeding is due to pelvic cancer. McCall[11] has reported that the 5 year survival rate of women with corpus carcinoma who were treated without delay was 63%, whereas the survival rate was only 47% in the group in which there was delay by the patient, and 51% in the group with delay by the physician.

Table 8 summarizes the factors of delay by patient and physician in carcinoma of the endometrium. The major factors in delay by the patient were failure of the patient to real-

TABLE 7

DELAY BY PATIENT AND PHYSICIAN ACCORDING TO SYMPTOMS OF PELVIC CANCER

	Per Cent No Delay	*Per Cent Patient Delay*	*Average Months Patient Delay*	*Per Cent Physician Delay*	*Average Months Physician Delay*	*Per Cent Patient and Physician Delay*	*Average Month Patient and Physician Delay*
Postmenopausal bleeding	29	47	21	15	7	9	13
Intermenstrual bleeding	23	51	11	13	12	13	23
Postcoital bleeding	16	60	15	0	0	24	16
Abnormal vaginal secretion	17	45	20	14	7	24	32
Pelvic pain	36	20	12	24	7	20	20

ize the potential seriousness of pre- and postmenopausal bleeding. As in carcinoma of the cervix, physicians diagnosed symptoms of pelvic cancer as being due to a benign lesion without performing a pelvic examination and a D and C. Inadequate operation for cancer of the corpus was done in one case.

The primary factors for advanced cancer were failure to have an annual physical examination in 16 (64%) of the cases, delay by the patient in 4 cases (16%), and a physician's error in 5 (20%) of the cases. An annual physical examination may not have prevented all of these women from having invasive adenocarcinoma of the endometrium. But an adequately performed pelvic examination with a sound passed into the uterus, taking Papanicolaou smears, and general counseling by the physician would have materially reduced the incidence and seriousness of this lesion.

Delay in Carcinoma of the Ovary

The detection of early carcinoma of the ovary is a difficult and often an impossible task. The disease begins insidiously and may give no symptoms until the lesion is inoperable.

This series of ovarian carcinomas is small and the percentage of delay has no statistical meaning. Hahn[1] reported 40% of combined delay by patient and physician in the Philadelphia Material. There was a combined delay of 36% in our material. In 3 instances there was delay by patient and physician and in one instance only delay by the physician. The average delay was 15 months.

Case 1. A 32 year old colored married multipara visited her physician because of abdominal pain and a yellow vaginal discharge of 9 months duration. The physician found a mass in the abdomen and made the diagnosis of pregnancy. When the patient did not go into labor 9 months later, the diagnosis of ovarian carcinoma was made.

Case 2. A 9 year old colored girl was noted to have an abdominal mass by her mother. The girl was examined abdominally by a physician and told to have the child urinate more frequently. One year later a malignant dysgerminoma was found at laparotomy.

Case 3. A 58 year old white nullipara noticed fullness in her epigastrium for 8 to 9 months. She consulted her physician who found a mass in her abdomen. The patient's course was followed and she was given shots for 7 months before an operation was advised. A granulosa cell carcinoma was found at operation.

Case 4. A 48 year old colored nullipara noticed dull abdominal pain for one and a half years. A physician was consulted and a mass was palpated by pelvic examination. The patient was not referred for operation for 7 months. An undifferentiated ovarian carcinoma was found at operation.

It is difficult to ascertain the primary factors for advanced cancer of the ovary. In 3 cases there was delay by patient and physician. The patient's symptoms were not dramatic, and it is difficult to criticize these patients for not visiting their physicians. In 4 instances the physician committed a fatal error by failing to evaluate abdominal masses. Possibly had all 11 patients had annual physical examinations the mortality could have been reduced by 50 per cent.

TABLE 8

PATIENT DELAY, PHYSICIAN'S ERRORS AND PRIMARY FACTORS FOR ADVANCED CANCER OF THE ENDOMETRIUM, OVARY, AND VULVA-VAGINA

Reasons for Patient Delay		*Physician's Errors*		*Primary Factors for Advanced Cancer*	
		Carcinoma of the Endometrium			
Believed bleeding due to "change of life"	11	Symptoms diagnosed as benign lesions without pelvic examination	6	Failure to have annual physical examination	16
Symptoms without pain	2	Performance of subtotal hysterectomy for carcinoma of endometrium	1	Patient delay	4
				Failure of physician to perform pelvic examination when symptoms of cancer present	4
				Subtotal hysterectomy for carcinoma of endometrium	1
		Carcinoma of the Ovary			
Denial or fear	2	Failure to investigate an abdominal mass	4	Failure to have annual physical examination	7
				Failure of physician to investigate abdominal mass	4
		Carcinoma of the Vulva and Vagina			
Denial and fear	3	Local treatment for vulval lesions 2 and 6 years	2	Failure to have annual physical examination	6
Ignorance of cancer	2	Local excision without radical vulvectomy	1	Local treatment of vulval lesion	2
				Local excision without radical vulvectomy	1

Delay in Carcinoma of the Vulva and Vagina

Carcinoma of the vulva usually has the highest combined delay of any organ in the genital tract. Hahn[1] reports a combined delay of 67 per cent. There was a combined delay of 75% in our material.

Carcinoma of the vulva should have an extremely low death rate. The lesion generally grows and metastasizes quite slowly and presents ample signs and symptoms of the disease.[12] Patients fail to report symptoms of the disease to their physicians, while physicians assume that vulval lesions are benign and thus treat them locally or by simple excision. The disease could essentially be eliminated by annual physical examination.

Case 1. A 39 year old colored multipara noticed a genital ulcer 2 years prior to admission. She reported this to her physician who treated the lesion with various solutions and powders. The lesion occasionally showed improvement but gradually progressed in size. Four months prior to admission she consulted a second physician who treated her with penicillin. There was no improvement under this treatment and the patient was referred to the hospital for treatment. Moderately differentiated epidermoid carcinoma of the vulva was found.

Case 2. A 38 year old colored married nullipara first noted a wart-like lesion on her vulva 6 years prior to admission. She was initially treated with penicillin for this disease. Subsequently she visited 3 additional physicians who prescribed various ointments. The lesion continued to grow and was excised by cautery 2 years prior to admission. An ulceration developed at the site of the local excision and continued to grow and invade the rectum. The patient was treated by radical vulvectomy, dissection of the deep and superficial lymph nodes and abdominal perineal resection for epidermoid carcinoma of the vulva.

Method of Reducing the Incidence of Pelvic Cancer

It is evident from these data that there is a sizable and unfortunate delay by patient and physician in the diagnosis of pelvic malignancies. But it is equally evident that 54% of the patients with carcinoma of the cervix had no symptoms of their disease until advanced cancer had developed. These women could only have been aided by periodic pelvic examinations.

Patient's delay can be prevented by intensifying the patient's education in cancer. This educational program should extend from the grammar school grades to the adult population. Physicians should be the leaders in this extended educational program.

Delay by physician can be corrected by doctors eliminating their own errors in the management of pelvic cancer.

Table 9 indicates that physicians make two types of errors in the management of pelvic malignancies.

Symptoms of cancer are diagnosed as benign lesions without a pelvic examination. This error increases the incidence of advanced cancer and negates The American Cancer Society's Educational Program.

Symptomatic treatment is instituted in the presence of symptoms of cancer without a pelvic or tissue diagnosis. The majority of these errors would not have occurred if the basic advice of Howson[13] had been heeded.

1. Examine all patients with pelvic complaints. Periodic examinations of women over 40 regardless of complaints should be urged.

2. The treatment of pelvic complaints must be withheld until an adequate diagnosis is made.

3. The pelvic examination must be made if at all possible at the time of the first visit.

4. The examination must be complete. The use of bimanual palpation, a speculum in good light, and sounding of the uterus.

5. Patient's actively bleeding should be examined in the presence of this complaint. No contraindication exists for this practice.

6. If a patient refuses examination she should not be treated. The patient may seek help elsewhere if so managed and ultimately submit to examination.

7. A lesion appearing suspicious of cancer should be

TABLE 9

PHYSICIAN'S ERRORS IN THE MANAGEMENT OF PELVIC MALIGNANCY

Symptoms diagnosed as benign lesion without pelvic examination		25
Diagnosis		
Due to "change"	12	
Due to "straining," standing on feet, blood pressure	9	
Due to obesity	4	
Treatment instituted in the presence of symptoms of cancer		57
Treatment		
"Pills"	20	
Douches	11	
Cauterization of cervix	8	
Pills and shots	7	
Shots	7	
Treated for urinary tract infection	4	
Pelvic examination performed but no smear or biopsy		10
Hysterectomy performed in the presence of cancer (no smear or biopsy)		8
Inadequate surgery for cancer		2
Failure to investigate abdominal mass		4
Local treatment for vulval lesion		2
Failure to perform pelvic because of bleeding or pregnancy		5

studied relentlessly until a definite conclusion is reached.

8. In the presence of known cancer proper therapy must be promptly instituted.

9. Arrangements for clinic or specialist's care for cancer patients must be made by the referring physician. The responsibility must not be placed on the patient.

By improved education of patient and physician, their delay in the diagnosis and treatment of pelvic cancer can be eliminated. But an extended program of annual physical examinations is required to help the 54% of patients who have no symptoms of pelvic cancer until the disease is advanced.

Invasive carcinoma of the cervix and vulva can be eliminated by periodic physical examinations and cytologic studies. Unfortunately, physicians are negligent in performing annual examinations.[14]

It is evident from table 10 that 79% of the patients who have been seen in cancer detection clinics in North Carolina had visited their physicians in the past 12 months, but only 17.4% had received a complete physical examination; 27.3% had not had an examination of the breast; 37% had not had a pelvic examination and 25% had not had a rectal examination.

But even more important, only 49.8% of the 3,460 patients had received a complete physical examination when it was specifically requested. Patients are visiting their physicians and expending funds on medical care. Only 2 patients in this study failed to report symptoms of cancer to a physician for financial reasons. The other patients had spent

TABLE 10

SUMMARY OF DATA ON CANCER DETECTION CLINIC VISITS IN NORTH CAROLINA ACCORDING TO PRIOR VISITS TO PRIVATE PHYSICIANS JAN. 1, 1953—JUNE 30, 1955

Number of Visits to Physician	*Number*	*Percentage*
Total Number	23,628	100
Patients visiting their physician in last 6 mos.	15,405	60.1
Patients visiting their physician in last 7-12 mos.	4,955	19.3
Percentage of patients visiting physician in 12 mos.		79.4
Type of Examination Received		
Complete physical examination	4,470	17.4
Breast examination	6,995	27.3
Pelvic examination	9,516	37.1
Rectal examination	6,403	25.0

During this period 3,460 patients visited their physician and requested a complete physical examination; only 1,724 or 49.8 per cent received a physical examination which included breast, pelvic and rectal examination.

TABLE 11

DELAY IN DIAGNOSIS AND TREATMENT OF PELVIC CANCER ACCORDING TO RACE AND RESIDENCE

	Per Cent White	*Per Cent Nonwhite*	*Per Cent Urban*	*Per Cent Rural*
No delay	54.2	45.8	47.8	52.2
Patient delay	58.0	42.0	46.3	53.7
Physician delay	44.7	55.3	38.9	61.1
Patient and physician	64.0	36.0	28.0	72.0

sizable sums on various types of "shots," medicines and office visits. This money could have been more wisely spent on a complete physical and cytologic examination.

This is particularly true in rural areas where there is the greatest incidence of delay by physician and patient, or by the physician alone.[15]

Sixty-one per cent of the cases in which delay by the physician and 72% of the cases with delay by physician and patient in examination had a R.F.D. mailing address.

No physician, either urban or rural, purposefully neglects or improperly treats any patient. But in a busy practice short cuts in diagnosis and treatment are often taken. When a physician's improper advice or treatment results in a patient developing advanced cancer, he is often unaware of his mistake and repeats it (Table 11).

It is necessary, therefore, to provide a place for the referral of patients in whom a physician finds it inconvenient to do an adequate examination. It is likewise necessary to establish state and county committees for the study of pelvic cancer similar to our maternal mortality committees.

Maternal mortality committees have been extremely important mediums of education for the physician. They have resulted in the reduction in the incidence of preventable maternal deaths and an improvement in ob-

TABLE 12

THE EFFECT OF COMMITTEES FOR THE STUDY OF PELVIC CANCER ON STAGES OF CARCINOMA OF THE CERVIX

	Philadelphia		*Baltimore*			
Years	1946 %	1951 %	1953 %		1956 %	
Stage O			18.1	40%	24.8	60%
Stage I	9	23	21.6		35.2	
Stage II	27	40	20.5		16.8	
Stage III	40	20	25.7		11.6	
Stage IV	17	7	5.9		5.8	
Per cent no delay			49		73	

stetric care. It is reasonable to believe that the medical societies of the southern states can develop a similar program for pelvic cancer.

The effect of the Baltimore and Philadelphia Committees in reducing delay by patient and physician in the diagnosis of pelvic cancer is presented in table 12. The percentage of Stage III and Stage IV carcinoma of the cervix have been materially reduced while the percentage of Stage I and II carcinomas have been increased. Particularly noteworthy is the fact that in 1953 there was no delay in 49% of cancer patients in Baltimore, while in 1956, there was no delay in 73% of the cases studied.

Summary

One hundred and ninety-one patients with pelvic malignancy have been carefully studied to determine the preventable factors in their illnesses. In carcinoma of the cervix, there was a delay by the patient of 42% with an average time of 18 months, a delay by the physician of 19% with an average time of 9 months, and a delay by patient and physician of 14% with an average time of 14 months.

Fifty-four per cent of the patients with invasive carcinoma of the cervix had no symptoms 6 to 12 months prior to visiting their physicians. Of the 46% of the patients who could have had their diseases diagnosed before it was advanced, there was an incidence of 16% neglect by the patient and a delay of 30% by the physician. In carcinoma of the endometrium there was a neglect by the patient in 16% and a delay in diagnosis by the physician in 20 per cent.

The incidence of pelvic cancer can be materially reduced by physicians stressing the importance of annual physical examinations and by the establishment of state and county committees for the study of pelvic cancer.

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Discussion (Abstract)

Dr. W. Norman Thornton, Jr., Charlottesville, Va. The authors have presented a problem of great significance related to preventive medicine and public health. The magnitude of the problem and obvious areas for improvement have been pointed out by the statistics of the material studied at the University of North Carolina School of Medicine. These findings confirm the facts presented by other committees established for the study of gynecologic malignancy.

It is interesting to note that in the group of 191 patients studied there were 146 patients with various stages of cancer of the cervix, and 11 patients with cancer of the ovary. This finding is of great significance since early malignancy of the cervix and ovary is asymptomatic. This fact must be stressed if we hope to avoid delay in diagnosis and treatment. This point has been stressed by the authors who found that 54% of all patients with all stages of invasive cancer of the cervix had no symptoms or signs to cause them to consult a physician. This finding is of much greater importance than delay by physician or patient in the diagnosis and treatment of gynecologic malignancy.

We cannot expect much improvement in the delay in diagnosis and treatment until we impress upon the public and the profession that in the majority of patients, curable cancer is asymptomatic. This program of education will demonstrate the importance of periodic and complete physical examinations. Unfortunately, the success of this program is somewhat dependent upon the general level of education of the group selected.

Under an ideal program, the patient would be responsible for delay in diagnosis if she fails to have a periodic examination. However, if the patient presents herself for periodic health evaluation and the physician fails to take advantage of the methods available for early diagnosis, including cytology, he would be responsible for the delay in diagnosis and treatment.

It will be sometime before we can hope to reach the ideal solution of the problem. Until that time, it would be wise for us to consider the problem and areas for improvement as outlined by the authors in their study.

Symposium on Stapes Mobilization

A reviewed interest has been shown in the old operation for mobilization of the stapes in deafness due to otosclerosis. The following two papers re-evaluate the procedure and describe technics used.

Indications and Technics*

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Introduction

RESTORATION OF HEARING is a challenging and most gratifying experience to the surgeon. I have had the now rather unique experience (unique in that I continue to practice double E.E.N.T.) of comparing the reaction of a successful restoration of hearing to that of restoration of vision. I find that the deaf patient displays more elation and gratefulness.

The deaf patient differs from the blind patient in that he projects his problems far beyond himself, affects members of his family, and influences those with whom he works very unfavorably. In the world of industrialization and keen competition it is imperative that one hear to maintain his job and advance himself. I have noticed changes of personality in the deafened patients causing them to lead an introverted life. Many of them wish to remain to themselves and to avoid social occasions. They have a rather expressionless face with only occasional smiles. After a successful operation has been done they cannot seem thankful enough. Many of the cases of perceptive deafness will raise their voice during conversation; while those of the conductive type will tend to talk very softly.

Indications for Mobilization of Stapes

I do not know of any absolute criteria for the prediction of results and the selection of cases for mobilization of the stapes as we know them for fenestration. Dr. E. P. Fowler, Jr., of New York, at the 1956 Memphis Ophthalmological Section of the Mid-South medical convention was asked to present criteria for the selection of ideal, suitable, and borderline cases for mobilization technic. He advised that the only method of certainty lies in an exploratory procedure on the middle ear. It seems reasonable to include both the cochlear reserve as determined by bone conduction and the degree of stapes fixation as measured by the air-bone gap and tuning forks in the selection of cases. The conductive loss due to interruption of the ossicular chain following fenestration, and which averages 20 or 25 decibels when the tympanic membrane is blocked, permits a reasonably accurate and reliable prediction of results from fenestration in each patient with otosclerosis. Theoretically, one should have no unrestored conductive loss after stapes mobilization, because the cochlear function as determined by bone conduction is the ceiling to the hearing result. It is feasible to expect return of the air conduction threshold to the pre-existing threshold of bone conduction or possibly to a slightly better level, since it appears that cochlear neural function is at least as good as, and perhaps sometimes better than measurements of bone conduction may indicate. The ceiling is only occasionally attained since a majority of the cases successfully treated have a variable residue of conductive loss, being smaller than that noted in fenestration results. A physiologic deficit need not exist under ideal conditions. Nevertheless, ideal conditions do not always prevail due to the ravages of the disease. Fenestration always carries with it a physiologic deficit. This is logical, of course, in view of the surgical destruction of the basic tympanic membrane-ossicular chain impedance matching mechanism destroyed in fenestration by removal of incus and malleus. One should expect an increased gain of air conduction as the air-bone gap increases. Thus, the greater the gap the greater the potential gain.

*Symposium on Stapes Mobilization, read before the Section on Ophthalmology and Otolaryngology, Southern Medical Association, Fifty-First Annual Meeting, Miami Beach, Fla., November 11-14, 1957.

Stapes mobilization can be used for patients, with partial fixation or an air-bone gap of only 20 to 25 decibels, unsuitable for fenestration because of the expected residue of unrestored conductive loss after the latter procedure. Mobilization is indicated, and with expectation of some success, in slight nerve degeneration combined with a good air-bone gap, where complete eradication of the air-bone gap can be hoped for, and with a better hearing results than fenestration could offer. This procedure is indicated in mixed deafness where the air conduction has deteriorated to such a low level that a hearing aid is of only limited use.

Age and poor health are of much less significance in direct stapes surgery. It carries a minimum disability and lacks the large postoperative cavity of fenestration, which requires periodic lifetime care. This surgical approach has been of unquestionable value in the modern treatment of chronic adhesive otitis.

Preoperative Considerations

Preoperative medication. It is not necessary to attain heavy sedation. The patient should be slightly drowsy but not narcotized. Seconal 0.1 Gm. and 50 mg. of Demerol are given one hour before operation. It seems that Hesperedin or Hesper C has a definite antihemorrhagic effect, if given in doses of 2 capsules 4 times daily for 5 days preceding operation. Premarin in 20 mg. doses is given intravenously about 15 minutes before the patient is brought into the operating room. The preoperative attempt to keep bleeding at a minimum is of utmost importance since a bloodless field is essential to adequately visualize the area of skin dissection and the contents of the middle ear.

Preoperative preparation. The mobilization technic requires several methods of lysis, which will be described in detail. Preoperative audiometry must always be carried out first, consisting of the following: (1) pure tone, A. C., and B. C. threshold determinations in the conventional form 125 through 8111 cycles; (2) speech reception threshold (S. R. T.) using spondee word lists; (3) speech determination score (S. D. S.); and (4) recruitment studies when indicated, by binaural loudness balance tests.

Prior to "prepping" the patient 2 one-inch wide pieces of Scotch tape are placed over the hair above and behind the ear to keep the hair out of the field. The patient is placed upon his back, and the head flexed to the side opposite to that of the surgeon's position. The ear is filled with colorless tincture of 1:1000 Merthiolate and allowed to remain 15 minutes. Too much stress cannot be placed upon a rigid aseptic technic. The external ear, surrounding skin, and Scotch tape are scrubbed thoroughly for 2 or 3 minutes with Septisol and allowed to dry.

Technic

This procedure (with the exception of children) is always carried out under local anesthesia, consisting of 6 cc. of 2% Novocain to 1 cc. of 1:1000 Adrenalin and about 5 drops of hyaluronidase, which causes the anesthetic to infiltrate quickly and extensively. A complete anesthesia is established for the external auditory canal, tympanic membrane and all portions of the middle ear with the exception of the chorda tympanic nerve.

The anesthesia is accomplished with three rather painless injections. Approximately 3 cc. of Novocain is injected slowly into the posterior wall at the one o'clock, three o'clock, and the five o'clock positions at the junction of the bony and cartilaginous junction of the external auditory canal.

The entire procedure is performed through a metal speculum as described by Dr. Rosen. The skin of the posterior osseous meatal wall is incised from twelve o'clock to six o'clock posteriorly, beginning close to the annulus and swinging lateralward about 7 mm. from the annulus in most of its U-course. The incision as well as the dissection is begun at the twelve o'clock position since the skin is thickest there. The incision is made with an angled knife. The skin is dissected with a small flattened cannula, which also acts as a suction, down to the sulcus annulus where the fibrous annular ligament of the tympanic membrane lies in the bony groove. A dry field at this point is highly desirous and is obtained by instilling 3 or 4 drops of 1:1000 epinephrine between the elevated skin and bone at the tympanicus sulcus. Caution must be exercised in removing the annular ligament from the bony groove of the tympanicus sulcus. This is best done with a slightly angled blunt needle probe by gently pushing it from the

groove. The very delicate transparent middle ear membrane is next separated with the needle probe. This membrane is responsible for the rather rapid regenerative ability of the drum. The ear drum, which is contiguous with the skin of the posterior wall, is folded anteriorly upon itself and at this point bleeding almost always ceases.

Sometimes upon entering the middle ear a surprisingly small amount of the incudostapedial surgical anatomy is visualized. At times only the tip of the incus may be seen, while in 60% of the cases most of the long process of the incus, the incudostapedial joint, the head and neck and part of the anterior and posterior crura of the stapes, the foot-plate, stapedial tendon, chorda tympani nerve, promontory of the cochlear and the round window niche are visible.

If these structures are not clearly visible under a 6 or 7 power magnification, it is necessary to remove an adequate amount of the posterior-superior bony rim at the tympanic annular bony sulcus giving clear visualization of the incudostapedial structures, especially that of the stapedial tendon. The bony quadrant is removed with a very small slightly curved chisel. The chisel is carefully placed on the bony rim and gently tapped by the assistant until a fracture is established, the fractured bone being removed with a curet. I believe this is superior to the burnishing burr since there is no danger of entangling the reflected posterior skin-tympanic membrane flap. This removal of bone should be done gently without trauma to the chorda tympani nerve, which can usually be pushed aside with little difficulty. Upon rare occasions it is necessary to cut the tympani nerve as it interferes with full visualization of the incus and stapes. This should be avoided if possible, because injury to it will produce disturbing symptoms to the patient for many days, loss of the sense of taste and paresthesia of the tongue. The bony canal of the facial nerve must be avoided and is clearly seen just above the niche of the oval window. All bony spicules must be carefully removed since they might retard healing of the skin flap.

I might add here that the use of the bone chisel facilitates a more speedy operative procedure because the bony particles to be removed are readily discernible and quickly removed, as compared to the meticulous care required in removing the small particles of bone-dust.

After adequate exposure, the status of the lenticular process in terms of thickness, softness, mobility and degree of attachment to the capitulum are carefully studied by insertion of a sharp point ten degree angulated probe into the end of the incus just over the capitulum, and gently applying pressure by the transincudal and transcapitular method.

Rosen's original technic consisted of applying force to the neck of the stapes in its anterior position to establish ossicular conduction. This method, if used entirely, would not infrequently produce disruption of the incudostapedial joint as well as fractures of the crura. I found it was possible to direct pressure to the stapes by applying pressure to the incus, thereby directing it through the incudostapedial joint to the crura and foot-plate. From here a step by step procedure is followed which will differ according to the degree of fixation of the foot-plate, and the degree of stability of the incudostapedial joint. The needle probe is engaged in the periosteum of the lenticular process, and, if application of force seems feasible by this technic, a very gentle pulsating force is transmitted through the incudostapedial joint to the foot-plate region in a direction which is determined by resistance encountered. In most cases the greatest degree of fixation of the foot-plate is located at its anterior limb. Therefore, the direction of the force is usually applied in a posterior direction, namely toward the stapedial tendon. If successfully applied, a surgical fracture will be produced through the foot-plate allowing a resumption of normal transmission of sound waves through a mobile ossicular chain into the perilymph of the cochlea. When the stapes loosens there is a sensation of sinking in toward the oval window, and also a posterior tipping of the stapes if the pressure was directed toward the posterior crus. Upon many occasions there will be a very audible clicking sound as the otosclerotic process is freed. Also, one will notice a definite shortening of the stapedial tendon as the pressure is applied anteroposteriorly in a successful mobilization.

If there is a failure to mobilize the bone the second choice is undertaken, which consists of applying pressure directly to the capitulum. Many times a lip of the capitulum

may be visible behind the incus upon which the point of a rather dull needle probe may be placed and gentle pulsating pressure applied in the direction of the posterior crus. It is often necessary to use an anteroposterior or a rotary motion. When all other procedures fail, I have been successful by placing the point of a moderately sharp needle probe at the inferior aspect of the capitulum and applying pressure at right angles to the crura or in an inferior-superior direction. I would like to stress, at this point, the importance of applying pressure intermittently, and in a pulsating manner increasing the force only slowly and gradually. One must display much persistence and patience during the mobilization procedure, and if one finds that he is becoming tired and impatient, he should discontinue the procedure temporarily and divert his attention to something else before resuming attempts at mobilization. If the capitulum is not visible, the lenticular process is pushed gently away from its insertion upon the capitulum until a sufficient amount of it is exposed to permit the application of the needle probe. If the procedure is successful, the lenticular process is reapplied to the capitulum in its normal relationship.

When the first two steps have failed to mobilize the stapes, the foot-plate is approached directly. Many times the foot-plate can be visualized with the operating loupe. The microscope makes it possible to see a large part of the foot-plate, and in many cases the actual otosclerotic disease. The sharp pick and small slightly maleable foot-plate chisel are used for the foot-plate work. The desired area is approached from the inferior aspect of the stapes with the curve of the pick going in front of the anterior crura. This places the point of the pick at the margin of the foot-plate at its most anterior portion. The instrument is used as a wedge with a boring motion. Working alternately on the incus, or directly to the head of the stapes is important at this stage. Foot-plate work must vary with each individual case, depending on the disease present and the visualization which is possible through the loupe or the operating microscope.

After the stapes has been mobilized, the tympanic membrane and the skin of the canal are replaced in their normal position. Before the skin is replaced in its original position, all blood is aspirated from the middle ear, including the niches of the oval and round windows.

Postoperative Care

The skin flap is held in position by small Gelfoam balls moistened in thrombin, which are applied at the line of incision and are not removed for one week. Should there be a perforation, a small piece of sterile cigarette paper or thin rubber is applied over it and allowed to separate itself a few weeks later. Without infection most of the perforations will heal rapidly. Antibiotics are administered for five or six days postoperatively.

Vertigo may follow mobilization with escape of perilymph for a few hours and usually responds to Bonamine or Dramamine. Vertigo during the mobilization procedure is usually a definite indication that one has freed the foot-plate of its ankylosis. With a pronounced increase of hearing I have noticed rather severe vertigo.

The patient returns home the day after the operation, and may also return to work the day following operation. The patient is asked to return in two or three days to determine the presence of infection, and if all is satisfactory he returns in another four days for removal of the Gelfoam balls and dry blood.

The hearing obtained at the operating table frequently disappears the following day, is improved in one week, and generally reaches its maximum in about one month. In some cases it continues to improve for several months, while in others it continues to decline. If the improvement in hearing persists for 6 months, it is, as a rule but not always, permanent. Tinnitus often decreases or ceases upon successful mobilization, and at times even though the hearing is not improved.

Complications during operation,—luxation of the long crus of the incus, fracture of both crura of the stapes, tearing of the chorda tympani nerve and perforation of the drum usually in the posterior inferior quadrant near the annulus. Postoperative complications, occasional accumulation of blood or serous fluid in the middle ear which, as a rule, is absorbed spontaneously, tubo-tympanic catarrh may develop and one may need to inflate the eustachian tube after two weeks to correct this occasional purulent otitis media.

Results of Technics and Personal Observations*

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MOBILIZATION OF THE STAPES for relief of chronic progressive deafness due to otosclerosis, has aroused a tremendous amount of interest on the part of the otologist, second only to the one stage fenestration procedure originated by Lempert,[1] in 1938. Credit must be given for the rejuvenation of this procedure to Rosen[2] of New York, who presented his work on stapes mobilization at the American Triological meeting in 1955. Prior to Rosen's work, such men as Jack[3] and Blake[4] of Boston, in 1892, performed the operation with little success. In reading the articles of these early pioneers, the procedures would appear somewhat ridiculous to us, but we must remember that we have not only the accounts of their experience to rely on, but also the advantages of high magnification, beautiful illumination, and antibiotics which afford better results to the otologist today.

In spite of these advantages we find ourselves some three years after the revitalization of the stapedolysis procedure somewhat confused as to: (1) preoperative predictions as to results in restored hearing from the mobilization procedure; (2) the proper procedure to employ in mobilizing the stapes for best results in improvement of hearing and (3) the duration of gained hearing in the event of satisfactory mobilization of the stapes.

The very fact that modifications of the procedure have been developed by such men as Goodhill,[5-7] House and associates,[8] Kos,[9] Shambaugh,[10] Fowler,[11] and Rosen[12] of this country, and Heerman,[13] of Europe, in an effort to improve results, indicates that we have yet to arrive at a satisfactory standard procedure for restoration of hearing of the ear deafened because of otosclerosis by manipulation of the stapes itself. This is due largely to the variations in the histopathology of otosclerosis and the variations in the anatomy of the stapes, crura and foot-plate.

Speaking from my own personal experience, I have found the stapes mobilization procedure far more difficult to perform with satisfactory results than the fenestration operation.

Good results of any operation, of course, depend on good technic; one of the first prerequisites for good technic in any surgical procedure is good exposure. I call your attention to the fact that the lower border of the foot-plate of the stapes is adequately visible in only 10% of cases, fairly visible in 35% of cases, and not visible at all in approximately 55% of cases. It is, therefore, essential that the surgeon take advantage of: (1) high magnification of the operating microscope; (2) good illumination; and (3) removal of the posterior wall for exposure of the oval window in its entirety.

Having established the prerequisites for mobilization, one must then adopt the technic which will afford the best results for the patient. I should like to call your attention to Shambaugh's statement, "The stapes mobilization is just as exacting and trying for the surgeon, nearly as time consuming, and in some cases actually more difficult, than the fenestration operation." Certainly, as we consider various technics developed by current otologists emphasizing foot-plate procedures, we find this operation becoming more complicated rather than simpler. For, as we adopt the foot-plate approach, we must consider that number of failures due to utricular trauma. These are indeed distressing and irreparable, and not to be minimized by the aural surgeon and the occasional operator since one bad result will erase a hundred good ones.

By way of review for better evaluation of results, and at the expense of repeating what Dr. Dabbs has already emphasized, the approaches to mobilization are as follow:

Indirect

1. Stapes neck
2. Stapes head
3. Transincudal

Direct

1. Fenestration of foot-plate (Rosen)

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2. Anterior crurotomy (Fowler)
3. Chiseling of foot-plate margins (Heerman, Shambaugh)
4. Mobilizer plus microvibrator technic, and direct approach (peribasal, monopodal or bipodal lysis—Goodhill)
5. Mobilizer at foot-plate and/or pneumatic hammer (House)

From a review of the literature, and by way of personal communication, as well as from personal experience, it would seem that at the most, only 45 to 50% of ankylosed stapes are mobilized by the indirect approach, so that one of the direct methods should be supplemented when gentle pressure at the capitulum or neck of the incus fails and one has established firm ankylosis of the stapes.

Results may be evaluated according to restoration of the pure-tone curve to a 30 decibel level or above, or to eradification of the air-bone gap. It is my feeling that a standardized method of evaluation should be adopted. The erasure of the air-bone gap would seem more practical when one considers the number of patients suitable for stapes mobilization, with one or more frequencies in the speech range registering at, or below the 30 decibel level by bone conduction. It is further felt that, probably the best and simplest method of classifying results would be a standardized method of listing closure of the air-bone gap in A, B, and C cases.

In reviewing the literature there is ample evidence that the direct or foot-plate approach, whether it be with the chisel, probe, or pnuematic hammer, has improved the percentage of patients receiving improved hearing some 15 to 20 per cent.

Rosen, in his original treatise presented at the Triological Association in Hollywood, Florida, recorded some 50% successful results by mobilizing from the neck of the stapes. In his first summary of results of 211 patients operated on for attempted mobilization, between April, 1952, and August, 1955, he reported as follows:

1. A Cases (maximum bone conduction losses at 500, 1000, and 2000 c.p.s. not greater than 10 decibels) 48% obtained a postoperative level between the normal and 30 decibel level.

2. Class B (maximum bone conduction losses for the three critical frequencies equivalent to 20 decibel loss). In this group 32% reached a postoperative level between normal and 30 decibel level.

3. Class C (maximum bone conduction losses for critical frequencies equivalent to 30 decibel loss). Here we note that 16.4% reached a level between normal and the 30 decibel level.

4. Class D (maximum bone conduction loss greater than 30 decibels). Ten per cent of these patients reached the 75 decibel level.

Reports from other otologists over the country revealed similar results. At best, these figures would not seem too satisfactory in view of 70 to 80% effective and lasting results as obtained from the fenestration operation; however, stapedolysis had aroused the interest of otologists all over the world and was rapidly establishing itself in the armamentarium of surgical procedures for the rehabilitation of the deafened.

In an effort to improve the over-all results in the stapedolysis procedure, attention was directed to the foot-plate, and currently we are in the midst of the era of transition in which a half dozen or more modifications are available to the surgeon for the purpose of subduing the ankylosed stapes, from which I believe will eventually evolve a relatively standardized procedure.

In 1956, Rosen reported on 77 operations in which he fenestrated the foot-plate with a barbed needle. These were patients in whom mobilization by other procedures was impossible because of firm ankylosis or crural fracture. Thirty-four per cent of these patients received a postoperative pure-tone threshold level or 30 decibels or better, and 54% received an improvement in hearing of less than the 30 decibel level.

My own experience with this procedure includes 2 cases in which I mustered enough courage to attempt a fenestration with the probe. The first, an "A" case, was done a year ago resulting in 90% closure of the air-bone gap; however, the postoperative threshold curve for air has gradually receded until it now lies at the 30 decibel level, indicating, most likely, a closure of the fenestra. The second patient, likewise, an "A" case, resulted in an endolymphatic hydrops with a 15 to 20 decibel loss as compared with the preoperative level; an excellent example of a distressingly bad result obtained through blind perforation of the labyrinth.

Even though this procedure is performed under high magnification, as was the case in my particular experience, it is still a blind approach, and I personally feel that I would have every right to expect this complication in a fair percentage of procedures, just as I would if I attempted to fenestrate the horizontal semicircular canal by a similar means. Of course, experience in any type of procedure is the secret to good results, but it would seem that the possibility of complications and the pre-eminence of closure of the foot-plate window would be contrary to the eventual adoption of this manipulation as a final resort in the persistently ankylosed stapes.

Other procedures have been mentioned by Doctor Dabbs.[14] Goodhill has reported significant gains in 53% of cases operated upon and 39% successes in his first 100 patients. In the second 89 cases, he reported 67.4% of significant gains, and 56.2% of successes, the improvement being due to the direct or foot-plate approach. In the first 100 cases there were some 15% having had a loss of hearing, and in the second series there are 9% with a loss indicating the value of experience and also an improvement in the foot-plate approach.

Goodhill in his usual thorough and precisely analytical manner, demonstrates very adequately results of stapedolysis in those patients who would not be satisfactory fenestration candidates. The crossbarred columns in B represent those patients receiving a hearing gain above the practical level. The black columns represent a closure of the air-bone gap to within 7½ decibels of the preoperative bone conduction curve. He has registered the over-all "surgical deficit" in the first 100 cases at about 17, and in the second group of 89 cases the "surgical deficit" (postoperative air curve compared with preoperative bone) at somewhere within 10 decibels. This is indeed significant as compared with the average surgical deficit of 20 to 25 decibels of loss in fenestration results. More recently, in a survey of 500 mobilizations using the peribasal, monopodal or bipodal lysis procedure in firmly ankylosed foot-plates, Goodhill has reported an average surgical deficit of 12 decibels. This value recorded as 17 in the first 100 cases was reduced to 10 decibels in the last 100 cases. In the last 100 cases he has shown successful results in 62% of all patients, and significant gains in 29% with a failure in 9% of ears operated upon, in other words 90% were mobilized.

In reviewing House's survey of 700 cases, we note the following: 66.6% of ideal cases (bone conduction 10 decibel loss or less) have reached the 30 decibel level or better; 50% of "B" cases (11 to 20 decibel) have reached the 30 decibel level or better; and 25% of "C" cases (20 to 30 decibel) have reached the 30 decibel level or better.

In an excellent survey of results of leading otologists including House, Shambaugh, Kos, Goodhill, Lindsay, Meltzer, and Fowler, Fowler[11] has compiled the following figures: 58% of 262 Group A cases received a postoperative gain to the 30 decibel level or better. Thirty-eight per cent of 469 Group B cases reached the 30 decibel level or better. Again considering closure of the air-bone gap, he noted that 11% of patients operated upon achieved complete closure, 16% were noted within 10 decibels of closure and 19% were within 11 to 20 decibels of the preoperative bone conduction curve. Further analysis reveals 67% of all cases operated upon, a closing of the air-bone deficit 25% or more; 33% of all cases closed the deficit 50% or more; 25% showed a 75% closure; and 5% were made worse. In the consideration of failures, 15% of all cases showed an 11 to 20 decibel loss, and 2% showed more than twenty decibel loss.

Shambaugh and Derlacki[15] (personal communication) have established an arbitrary criterion of success as occurring in those cases in which air-bone gap was reduced 50% or more. In 447 cases in which the chisel was not used, 181 or 40% were successes, with 266 failures (49% or less reduction of air-bone gap). Of the failures there were 21 with a loss of 11 decibels or more over the preoperative air conduction level. The comparable figures for 263 cases in which the chisel technic was used 140 were successes (50% or better reduction of air-bone gap), and 123 were failures. Sixty-five of these closed the gap 80 to 100% or better, and 6 of this group showed a loss of 11 decibels or more.

Finally, results of my own series of 72 cases are discussed below. Thirty-four of these patients are considered as treated successfully

with a hearing gain at the 30 decibel level or better. Eleven of this series were definitely "D" cases with the bone conduction for 512, 1024, and 2048 registering well below the 30 decibel level. However, since there was an air-bone deficit in two or more frequencies, mobilization was felt indicated. In 4 of these patients there was sufficient gain to make the procedure worthwhile, although the average postoperative gain for the critical frequencies did not reach the level of adequacy.

I believe in the future there will evolve a fairly standardized procedure for the mobilization operation, and I personally feel it will center around the chisel technic, of Heerman and Shambaugh; the peribasal, submucosal, monopodal or bipodal lysis, or a modification of these procedures in those cases which are resistant indirectly with the exception, of course, of those cases of far advanced otosclerosis at the site of predilection anterior to the anterior crus in which anterior crurotomy must be performed. Certainly these seem to be more physiological approaches to the management of bony fusion; however, one must consider the possibility of fibrosis reoccurring in the submucosal approach and time alone will eliminate this possibility.

Complications

In the consideration of results of any operation one must, unfortunately, consider complications of the operation. These have been enumerated in the literature and I shall not go into detail except to say that in the direct or foot-plate approach the danger of labyrinthine damage increases greatly, and much perseverance, patience, and skill must be utilized in order to keep this distressing occurrence at a minimum. Shambaugh has stated that the chance of making the hearing worse by mobilization is three times greater than by fenestration. This, indeed, is understood when one considers the proximity of the foot-plate to the delicate structure of the membranous labyrinth as brought out by Anson and Bast.[16] Occasionally the utricle may be in actual contact with the stapes foot-plate and utricular vertigo necessarily increases with foot-plate surgery.

Shambaugh and collaborators have classified the motility of the stapes in four gradations,

Grade I—Slightly mobile

Grade II—Moderately mobile with free movement of the stapedial tendon

Grade III—Ideal mobility with freely movable stapes

Grade IV—Rupture of annular ligament, loss of perilymph, hemorrhage or multiple fracture of stapedial foot-plate.

The ideal mobility is Grade III. Grade IV mobility may be complicated with severe vertigo and loss of hearing, and of course, should be avoided.

Other complications include,

1. Tear of the membrana tympani. This is best handled with a small piece of surgical silk. Those persisting postoperatively may be grafted with a split thickness graft in the usual manner.

2. Crural fracture. These may be kept at a minimum with use of the operating microscope, if one maintains constant observation on the crura for early fracture line.

3. Separation of incudostapedial joint. Attempt should be made to reapproximate the ossicles and glue them with topical thrombin.

4. Absolute foot-plate rigidity. I have not had experience with removal of the stapes in these cases as described elsewhere.

Shea[17] has described a method of removal and replacement with an artificial stapes. Rambo[18] has mentioned a preference of removal of the foot-plate and covering the oval window with the ear drum itself. I would prefer fenestration of the horizontal canal to either of these procedures until further evidence warrants the efficacy of these procedures.

Conclusions

1. Results of the stapedolysis operation with regard to various technics now employed have been reviewed.

2. It would seem that the direct or foot-plate approach has improved over-all hearing results some 15 to 20 per cent.

3. Having had personal experience with all of the technics in a limited number of cases, the author, recognizing the danger of labyrinthine damage in the foot-plate approach, would prefer the chisel technic as developed by Heerman and Shambaugh.*

4. Results should be tabulated in refer-

*In the interim of the year which has just transpired since the presentation of this paper it is interesting to note that he chisel technic has been fairly universally adopted by most aural surgeons with considerable improvement in over-all results.

ence to closure of the air-bone gap in A, B, and C cases.

5. High magnification and good illumination are essential in the stapedolysis procedure.

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Para-Anal Cutaneous Lesions:

Exclusive of Pruritus Ani*

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A NUMBER OF PRIMARY SKIN CONDITIONS which have anal manifestations, a local rash as part of a generalized eruption seen with systemic diseases, are merely to be mentioned. These primary dermatologic conditions and their treatment in this area would be the same as elsewhere. Some of the conditions in this category are: psoriasis, eczemoid dermatosis, and allergic dermatosis, including drug rashes; and there are the dermatoses of viral, larval, bacterial, and rickettsial origin, such as measles, smallpox, pyodermia, impetigo, fungus infections, skin parasites, Rocky Mountain spotted fever and actinomycosis. These are all primarily medical or dermatologic conditions and the cutaneous manifestations are only a local portion of the over-all condition and are not isolated for local therapy *per se*.

A number of conditions can cause elevation and distension of the para-anal cutaneous skin. Primarily these conditions would fall into two main categories, those secondary to abscess formation, or to tumors, whether benign or malignant. With abscess formation the elevated skin is usually tight, hyperemic, congested, at times fluctuant, and always painful to touch and pressure. Abscesses are almost always phases in the development of fistulas, and their treatment is surgical drainage as well as removal of the internal fistulous opening. Benign tumor masses may be catalogued according to the primary tissue involved, and include such swelling as acute thrombotic hemorrhoids, dermoids or sebaceous cysts, fibromas, keloids, lipomas, xanthomas, and congenital deformities as chordoma and teratoma. In all such cases, with possible exception of chordoma and teratoma, simple surgical excision is all that is indicated. Examples of malignant tumors which cause elevation or distension of the skin in the para-anal region are the various forms of sarcoma, lymphosarcoma and angiosarcoma, as well as all other connective tissue combinations and idiopathic multiple hemorrhagic sarcoma (Kaposi's disease). Radical surgical excision is indicated in all these conditions.

Arbitrarily, and as a matter of convenience, the remaining para-anal skin lesions may be divided in four remaining categories: (1) precancerous lesions; (2) malignant cutaneous lesions; (3) ulcerating cutaneous lesions,—benign, infectious or viral cutaneous lesions; and (4) miscellaneous lesions.

(1) The *precancerous cutaneous lesions* are keratosis, x-ray and radiodermatosis, leukoplakia and kraurosis. In these conditions, whether secondary to chronic trauma, infection, or to irritation by chemical or mechanical agents, the various constituent cellular elements have undergone abnormal cellular arrangement and are most commonly characterized by early mitotic configuration. In this group, except x-ray and radiodermatosis, wide local excision, with or without subsequent skin grafting, is indicated.

(2) *True malignancy or cancer* of the para-anal skin exists in the form of basal cell or squamous cell carcinoma, malignant melanoma, and less often in the form of epithelial malignant changes in connection with fistulous sinus openings. Two relatively infrequent conditions fall under this same classification. They are malignant hidradenoma and the intra-epidermal malignant changes seen in Bowen's disease. Metastasis from basal cell carcinoma is practically nil; the squamous cell variety of metastasis is less common than that ordinarily seen with adenocarcinoma; and, metastasis associated with malignant melanoma is early and frequent. However, locally, squamous cell carcinoma is more invasive. In the case of squamous cell melanoma types of malignant cutaneous lesions, the most radical surgery, including lymph node dissection, is indicated. In the basal cell type as well as the glandular changes in the fis-

*Read before the Section on Proctology, Southern Medical Association, Fifty-First Annual Meeting, Miami Beach, Fla., November 11-14, 1957.

tulous openings, Bowen's disease and hidradenoma, less radical or local excision is often adequate.

(3) Among the *nonmalignant ulcerating para-anal lesions* are the simple anal ulcer or fissure, tuberculosis, syphilis, lymphopathia venereum, and acute hidradenitis suppurativa. In all these conditions the characteristic appearance, specific antigenic tests and laboratory procedures for accurate diagnosis are well known and universally accepted procedures. The treatment varies from wide drainage and excision in hidradenitis, to treatment of the systemic disease manifested by the local lesions of tuberculosis or syphilis.

(4) The *miscellaneous group* includes primarily, various types of nevi (pigmented or vascular), warty tumors, including simple verrucae and condyloma accuminata, prolapsed or ectopic hypertrophied anal papillae, local postoperative scars, sinus tracts secondary to anal or rectal fistulas, or possibly low-lying pilonidal sinus tracts, traumatic injuries including local lacerations and abrasions of the skin, and finally purpuric lesions secondary to a blood dyscrasia. Pigmented nevi, subject to repeated trauma in this area, are best removed by sharp local excision. The common verruca including condyloma can be removed by local chemical agents, thermal fulguration or desiccation, or by sharp dissection. The papillae should be surgically excised. The purpuric manifestations naturally require general medical evaluation including blood studies. Naturally, sinus tracts are removed at the time of primary operation, whether for an excision of a pilonidal cyst or correction of a rectal fistula. Other conditions falling into this miscellaneous category, especially the traumatic injuries, have to be considered individually.

Summary. Briefly, we have attempted to present an arbitrary classification of para-anal cutaneous lesions which we use in everyday practice and have found to be workable and practical.

Discussion (Abstract)

Dr. Mark M. Marks, Kansas City, Mo. Drs. Lucas and Ryan have undertaken a monumental task in the selection of their subject. For this and the excellency of presenting a vast sum of information in a limited time, they are to be congratulated.

The multifold problems of perianal dermatoses, as they rightfully stated, are a contiguous part of those skin lesions that affect the rest of the body and should be so considered. Many are of local origin and may be symptomatic of systemic disease. Because the proctologist is often the first to see skin involvement in his patients, it is becoming increasingly important for him to recognize the condition so that he may institute proper treatment or call for the necessary consultation.

I wish to thank Drs. Lucas and Ryan for the privilege of discussing their paper. Their stimulating dissertation should awaken interest in dermatoses seen in our specialty practice and sharpen our acumen for better service to our patients.

Contracture of the Bladder Neck:

Experiences with the Bradford Young Operation*

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Particularly in young persons, this type of operation seems a better procedure than transurethral resection.

A NEW OPERATION for correction of bladder neck contracture was introduced in 1953 by Bradford W. Young of Stanford University. There has been widespread acceptance of the procedure and generally good results have been obtained.[1-4] We present our experiences in 43 cases done over the past 3 years.

Indications

The operation has its greatest application in children, though a very useful place in adults also. In this series the high incidence of children under 6 (22 of 43) reflects the problem of enuresis and clothes wetting as presenting complaints by parents (Table 1).

The symptoms presented by the patients are listed in table 2. These numerous subjective complaints are not in themselves too important since they seldom are properly presented by the parent or patient. On the other hand if the history is carefully obtained, and especially if there is an opportunity to observe the patient before operation, the typical and almost classical symptoms of obstruction can be elicited. A bladder working against an obstruction from whatever cause (prostate, stricture, etc.) goes through cyclic equilibrium, failure, and compensation. When there is equilibrium and nearly normal urination, the patient nor the child's parent is usually concerned. When failure occurs there is straining, hesitancy, dribbling and a sensation of incomplete emptying. Infection frequently follows due to residual urine and the bladder cycle is interrupted because of inflammatory symptoms. Without infection the period of failure, which varies from a few hours to several days or so, is followed by frequency, urgency, urgency incontinence, enuresis, and clothes wetting. Equilibrium then follows when detrusor hypertrophy can overcome the obstruction. Thus the symptoms the patient presents varies with the cycle of the bladder, the duration of the symptoms, and the degree of damage to the bladder and upper tract. Also, frequency and bedwetting are listed more than hesitancy and dribbling, because parents are more concerned with the former than the latter, although a careful history usually contains both as part of the same picture.

TABLE 1

AGE WHEN OPERATED UPON

Under 2— 1	10—2
2— 1	11—1
3— 4	12 to 20—2
4—12	21 to 30—1
5— 4	31 to 40—3
6— 0	41 to 50—3
7— 5	51 to 60—1
8— 1	over 61—1
9— 1	

TABLE 2

SUBJECTIVE COMPLAINTS OF PATIENTS WITH BLADDER NECK CONTRACTURE

Frequency	30	Flank pain	5
Urgency	25	Hesitancy	5
Enuresis	23	Foul odor to urine	5
Dysuria	19	Small urinary stream	4
Urgency incontinence	18	Vaginitis	3
Pyuria	16	Hematuria	3
Straining to void	10	Low back pain	2
Dribbling	10	Urinary retention	2
Suprapubic discomfort	10	Penile discharge	1
Fever	9	Nausea and vomiting	1
Clothes wetting	8	Epigastric pain	1
Nocturia	6	Headaches	1
Interrupted stream	6	Retarded weight and growth	1

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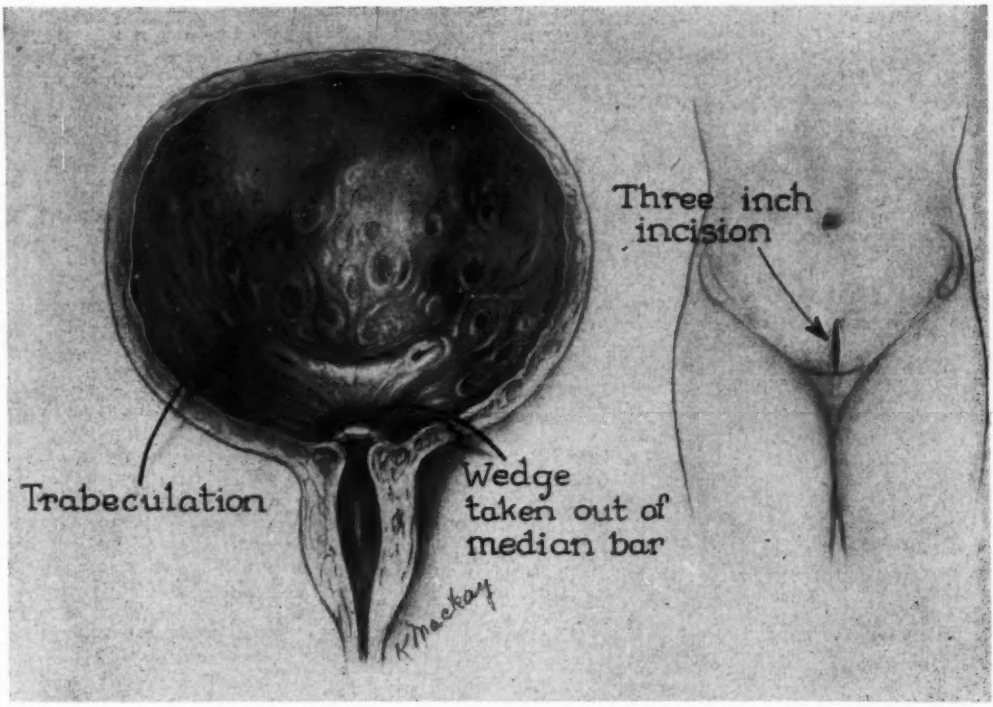
A complete urologic study is necessary to confirm the suspicions drawn from the history. For adequate observation of the bladder from the meatus to the bladder generally, the foroblique lens and the right angle lens are essential; this and intravenous or retrograde pyelography we consider the absolute minimum of investigation. Cystometric studies are made in older children and in adults, and we are increasingly impressed with their value. Determination of the residual urine in the failure portion of the bladder cycle, and of ureteral reflux in the compensation phase are of value.

With the foroblique lens, the bladder neck usually appears contracted, though in cases of long standing the neck may be in a fixed open position associated with marked detrusor decompensation. The bladder is invariably trabeculated, from mild to severe degree, some with cellules and diverticuli. Young[1] has stated that "even in the absence of a definite anatomical abnormality of the bladder outlet, a heavily trabeculated bladder with no other evidence of distal urethral obstruction will often indicate a responsible factor at the vesical neck." In a few patients in our series, trabeculations were not present when they were first seen, but they have developed this finding frequently within a few months.

All of the patients in this series received previous therapy either at our hands or others. Twelve transurethral bladder neck resections in 9 patients, meatotomy in 5, and numerous urethral dilations had been done. All had received some type of medical therapy. One case of prostatic valves is included in this series; they were excised at the time of an open plastic operation of the contracted bladder neck; another instance was seen during the period covered by this series and was treated by fulguration.

We have abandoned transurethral resection for children except in very minor conditions and treat all cases of bladder neck

FIG. 1



Sagittal section of the bladder and urethra showing thickened bladder neck, trabeculations with cellule formation, and contracted bladder neck with median bar. A suprapubic midline incision is the usual one made although a transverse incision is satisfactory.

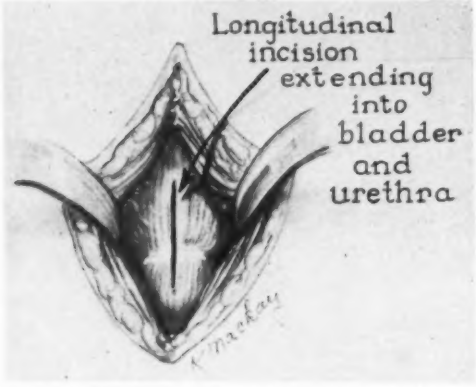
contracture by the Bradford Young operation. At the present time adults are treated in this manner only after other methods, usually transurethral resection, have failed.

Technic

The operation is performed as described by Young.[1] Through a retropubic exposure an incision is made longitudinally extending into the bladder and into the urethra,—the total incision is about 1 inch long centered over the bladder neck (Figs. 1 and 2). A wedge resection of the posterior lip of the bladder neck is usually done and this incision has on occasion been closed transversely (Fig. 3); the bladder-urethral incision is then closed transversely with interrupted sutures (Fig. 4). A Y-incision with a V-closure can be done but we believe more room at the bladder neck is obtained with the transverse closure. Drainage by urethral catheter is maintained for 4 to 5 days in females and drainage by cystostomy tube in males to prevent urethral strictures. Several children have pulled out their catheters, or the Foley catheter bulb has broken as early as 24 hours after operation; catheters have been replaced if leakage of urine occurred, but results have been the same when left out. We believe catheter drainage to be a more civilized way to handle the urine but is not necessary for the success of the operation. The operating time is around 30 minutes for an adult and a few minutes less in children.

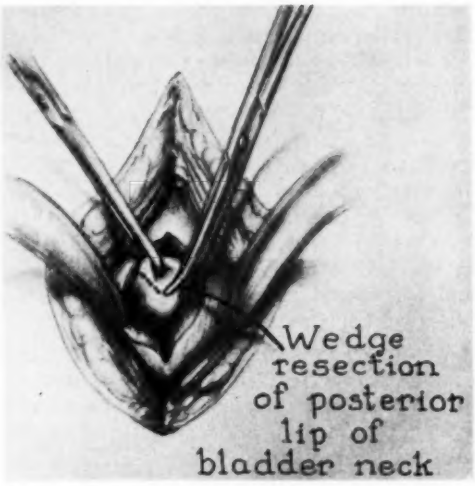
The course of our 43 cases have been followed from 3 years to 3 months, and are judged excellent in 30 cases, good in 9 cases (a few of these may later be termed excellent), fair in 4, and poor in one case.

FIG. 2



The incision from the bladder into the urethra is about 1 inch long and is centered about two-thirds of its length in the bladder and one-third into the urethra.

FIG. 3



The wedge resection of the posterior lip of the bladder neck is not always done but is usually necessary in most cases.

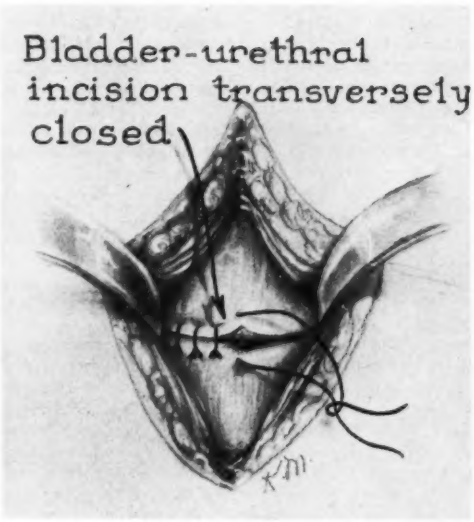
Case Reports

Case 1. G. S. (CMH No. 130497). A 37 year old woman was seen first in 1952 with acute right pyelonephritis. She had had several other such episodes in the previous 4 years. Diagnostic studies were within normal limits except for a tight bladder neck. In 1953, in a period of bladder failure she was found to have 420 cc. of residual urine and, for the first time, trabeculations of the bladder.

In May, 1953, a transurethral resection of the bladder neck was done, removing 3 Gm. of tissue. Postoperatively she could not void, and a week later 3 Gm. more was resected, down to a point almost of perforating the bladder neck. Again she was unable to void completely and had 500 cc. of residual urine. For 3 years she carried at least this much residual urine and catheterized herself twice a day without incurring infection. Occasionally, for short periods of time, the bladder would compensate and she would void normally, but such relief would last only a week or two. There was no response to any drugs to stimulate emptying.

In May, 1956, 3 years after resection she had 600 cc. of residual urine, nocturia 6 to 7 times, and a daytime frequency of every 20 to 30 minutes with straining and dribbling. Endoscopically the bladder neck was in a fixed open position and a few trabeculations were seen. Cystometry showed an atonic myogenic bladder with no change from 3 years previously. A Bradford Young bladder neck plastic operation with a transverse closure was done on May 18, 1956. Immediately after the catheter was removed 5

FIG. 4



An alternative closure is a Y-incision with a V-type closure.

days later she voided a strong stream with no residual urine. Sixteen months later she still emptied her bladder completely, had occasional nocturia, and a daytime frequency of every 3 or 4 hours. The result is termed excellent.

Case 2. E. H. (CMH No. 131222). An 11 year old girl was seen first in 1952 because of recurring episodes of bladder infection. She was then 7 years of age and had had infection since infancy. Cystoscopy disclosed a contracture of the bladder neck, secondary bladder trabeculations, and a normal upper tract.

Urethral dilations were carried out while the chronic pyelonephritis was treated intensively with antibiotics. She became symptom-free and was not seen again until May, 1956. During the interval she had had several mild episodes of bladder irritation associated with cyclic failure. She complained of chronic low abdominal pain, straining to void, enuresis and frequency.

In May, 1956, she was hospitalized with fever of 105°F. and frequency and urgency of urination. I.V. pyelograms showed normal kidneys and a serrated bladder outline. A Bradford Young plastic operation of the bladder neck was done; the bladder wall was greatly thickened and the neck would barely admit the tip of the little finger. A transverse closure of the bladder-urethral incision was made. She was discharged on the 6th postoperative day. She had diminishing urgency incontinence for 2 months. One year after operation she had remained free of urinary infection, and had a strong and forceful stream without enuresis or frequency. She had slight urgency of urination. She is an only child, close to her mother, and was going through puberty; I believe the urgency was on the basis of apprehension and not urologic, but in the absence of proof her result is judged good.

Case 3. M. G. (CMH No. 141984). A 53 year old apprehensive, highly nervous woman was seen first in June, 1953. She complained then of right flank pain and had been hospitalized numerous times for right-sided pyelonephritis. A contracture of the bladder neck, trabeculated bladder and marked right nephroptosis, with retention of dye on emptying film, was found. A nephropexy was done.

From then until January, 1957, she was seen at intervals of not greater than 3 or 4 weeks. She always complained of right flank pain. Numerous measures, empiric and scientific, gave only temporary relief. The office nurse saw her void once with straining to the point of redness in the face. The history of cyclic failure was then easy to obtain. The patient stated that as long as she could remember she had had to strain and had considered it normal for her. Although cystitis had occasionally been present to a mild degree, we had been misled by her complaint of right flank pain in the face of generally normal findings.

In January, 1957, a transurethral resection of the bladder neck was done. Immediate results were excellent, with the previously found 30 cc. of residual urine gone. Two months later she again was in bladder failure and the residual urine rose from 50 to 650 cc.

In April, 1957, a Bradford Young plastic operation of the bladder neck was done. When the catheter was removed she was shocked by the large size and marked increase in force of the urinary stream, though not as good as expected. Two months later she was symptom-free, had no residual urine, and voiding well.

Three months after operation she returned complaining of bladder fullness. There was 650 cc. of residual urine found. She refused hospitalization, so on the weekends when she was not working a Foley catheter was left indwelling. The residual urine has gradually dropped to zero along with an increase in force and size of the stream.

The result in this case is fair and ultimately should be good. Although cystometry had shown an atonic myogenic bladder, we had felt that enlarging the bladder neck would allow the detrusor to compensate. In any case of severe decompensation of the bladder from whatever cause, the time honored principle of bladder rest before or after operation applies and should have been done here.

Case 4. T. C. (CMH No. 139101). A 4½ year old boy was seen in January, 1957, because of enuresis and wetting of the clothes due to urgency incontinence. At cystoscopy he had small urethral valves and a contracted bladder neck with heavy bladder trabeculations and cellules. A Bradford Young procedure with transverse closure was done, the urethral valves being easily removed at the time.

Postoperatively he developed moderate urethritis around the indwelling urethral catheter and it was removed in 3 days; the abdominal wound then leaked urine. When the urethritis had apparently cleared up, a tiny urethral catheter was replaced; again urethritis developed but the abdominal wound stayed dry when the catheter was removed. For several weeks he cried with each voiding, but had a large and forceful

stream. Ten weeks postoperatively his stream was small and bed and clothes wetting had returned. Distal and proximal urethral strictures were treated with dilation and disappearance of the symptoms; intermittent dilations have been necessary to keep him symptom-free. Tranquilizers and psychiatric treatment for a poor home situation have been of great benefit. Re-examination by cystoscopy shows a good anatomic result, and while hospitalized he had no urologic symptoms whatsoever.

The result in this case is poor. We have successfully treated the primary lesion but have left a condition that will be traumatic, both mental and physical to this little patient. We now drain the bladders in males by cystostomy tubes.

Discussion

There is no perfect operation in medicine, but the Bradford Young plastic operation of the bladder neck is better than any we have used previously for contracture of the bladder neck in children. We have abandoned transurethral resection in children in favor of this procedure. Ten patients had urethral dilations, and 9 patients had 11 transurethral resections all without significant benefit prior to the Bradford Young procedure, which improved them. In adult patients, with long-standing bladder failure, we still choose transurethral resection as the primary procedure, but we tell them preoperatively that an open procedure might later be necessary if the enlarged neck obtained by transurethral resection is insufficient for an already weakened detrusor. In 128 transurethral resections for contractures of the bladder neck done from January 1, 1956, to July 1, 1957, three patients had secondary Bradford Young procedures (Case 3 is one).

Summary

The Bradford Young plastic operation of the bladder neck gives generally good results and is the procedure of choice in children. It is applicable in adults, particularly when the limitation of transurethral resection cannot relieve the patient. Our experience with 43 cases is presented.

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Discussion (Abstract)

Dr. Peter L. Scardino, Savannah, Ga. The importance of the authors' contribution to the orderly development of urologic surgery cannot be overemphasized and is perhaps best understood by reference to the literature on the subject of vesical neck obstruction. When Dr. Reed Nesbit says "Our observations thus far have made us feel enthusiastic about the procedure (Bradford Young) and we commend it to others in the treatment of recurrent vesical neck contracture," one would suspect that the transurethral balloon had burst. Another great name in American Urology, Dr. Edgar Burns, states with his colleagues, "In more recent cases wedge resection has been supplemented by a modification described by Bradford Young in 1953. Transurethral resection is quite adequate for removal of the obstruction in older children. Some urologists use it for all age groups and appear to be satisfied with the results obtained. In our hands better results have been obtained by the open approach in the younger age group." These sage observations would lead one to conclude that the resectoscope is not the panacea for the treatment of all bladder neck obstruction as once proposed, but must take its proper place in the urologic armamentarium.

In Galveston Dr. Charles Hooks has had gratifying results with the resectoscope. His treatment of bladder neck contracture consists of a loop incision of the base of the bladder at a midpoint in the base and carried deep into the muscle and extending distally through the trigone, the vesical neck and in the male the prostatic urethra to the external sphincter. Dr. Hooks has observed an immediate release of the contractile fibers, and has seen the floor of the bladder, the contracted neck and the prostatic urethra separate as if the two sides were pulled apart. After several days of catheter drainage, healing occurs with encouraging rapidity.

The authors' first case is very impressive and may be used as the focal point of agreement. While 22 of their 43 cases were in children under the age of 6, a very satisfactory result indeed was obtained in their first case which was a 37 year old woman. After two resections of the vesical neck and innumerable drugs (the actual effect of many of the so-called detrusor stimulating drugs having failed) the Bradford Young procedure was performed. It has been my experience too that the place for an operative procedure like the Bradford Young is to be found in those adults who have failed to respond to adequate resection as well as those children in whom an adequate resection cannot be done.

Certainly there is a place for the resectoscope in the treatment of obstruction at the bladder neck. But are we not witnessing what one would expect at this stage of urologic development, the reflection of the application of one technic to all cases of obstruction. Did we not go through this same soul-searching with regard to prostatectomy? At long last we have come to an acceptance of the necessity for training residents in all technics. Many thousands of satisfactory transurethral resections of the vesical neck have been accomplished during the past 25 years, but what has

proved to be the case is that the resectoscope is not the panacea for all contracted bladder necks. How one can best determine which procedure to employ should depend on the diagnostic acumen of the urologist and not on emotional preference. In this day and age one cannot rely on the time-worn admonition that the reason one urologist prefers one operation on the prostate to another is because he cannot use the resectoscope or does not know the perineum!

Dr. Youngblood and his colleagues are to be complimented for having added to the growing list of important reports on the failure of transurethral surgery for obstruction of the bladder neck and for giving us these encouraging objective results obtained by open excision of obstructing tissue. It would seem that the success of the various open procedures is due to the replacement of the excised contractile tissue with a viable full-thickness graft. Whether the technic is that of Bradford Young, Sinatra's Y-V Plasty or other similar procedures, success is due to the viable tissue brought into the area of contracture which remains normal bladder and prevents future scar formation.

Five years ago it was the urologic *avant guard* that found a wealth of possibilities in the small bowel. Today it is the vogue of every Tom, Dick and Harry to use a loop of ileum at the slightest provocation since it is so stylish to do so. The paper which we have just heard should serve to remind us of the folly of such scientific pitfalls. It has been our experience that the use of a viable, full-thickness, tissue graft is a sound surgical principle. There is every reason to expect that this principle applied to the disease of contracture of the bladder neck is no exception and is the operation of choice.

Dr. Meredith F. Campbell, Miami, Fla. Drs. Youngblood and Tomlin have presented a most interesting array of cases with, on the whole, gratifying results. It cannot be overemphasized that congenital contracture of the vesical outlet is of extremely high incidence, being pathologically the counterpart of the commonly observed congenital stenosis of the urethral meatus at the outer end of the channel. In my experience, congenital ureteral stricture, especially at the ureterovesical junction and often bilaterally, has been a frequcnt coexistent anomaly with contracture of the vesical neck, a fact commonly overlooked and explaining the absence of cystographic vesico-ureteral reflux in some cases in the presence of advanced long-standing obstruction of the bladder neck.

The symptomatology in these cases may be of great variety. In my patients chronic pyuria or the enuresis syndrome have been the two most frequent reasons for urologic examination. As Drs. Youngblood and Tomlin have emphasized, the diagnostic investigation demands urethrocystoscopic study with a forward vision instrument; apparently even many urologists do not as yet fully appreciate that right-angle vision instruments are essentially useless in this examination except for visualization of the bladder interior. Most often the bladder outlet shows concentric contraction but pronounced elevation and thickening of the inferior segment is characteristic. The obstructive factor is emphasized by variable trigonal hypertrophy, the degree of which is to me of relatively greater clinical significance than the amount of residual urine.

Choice of treatment of contracture of the bladder neck in the young offers a point of deviation of opinion among urologists. I am aware that in the last few years various open plastic procedures for the correction of bladder neck and deep urethral obstruction have been increasingly employed and even to the extent of suggesting a certain "knife-happiness." In general, these operations have been some variation of the procedure described by Bradford Young and which I have employed in a few cases, chiefly for technical reasons in very young males, as young as six months, or when wide transurethral resections had not given the desired results. Yet I can see no justification for the routine employment of the open operation in contracture of the bladder neck in infants and children, nor for its use at any time in the treatment of valves of the prostatic urethra or of hypertrophy of the verumontanum for which, in my hands at least, transurethral resection has been eminently satisfactory. Moreover, I cannot see why any urologist capable of properly performing transurethral resection in older patients should not be equally able to carry out the procedure adequately in any child into whose urethra the 16 F. resectoscope can be passed without gross trauma. Parenthetically, I rarely use perineal urethrostomy for transurethral resection in young boys whose urethra is too small for the 16 F. resectoscope. It is true that occasionally a second or, seldom, even a third resection may be required to achieve the desired result,—just as may occur when the patient is an adult.

I have operated on some of these young patients by the open method; incision through the vesical neck ring has disclosed the tissues to be almost like cartilage,—a condition quite similar to that described in adults by Legueau and others of the French school as prostatisme sans prostate. In such cases, both in young and old, the open plastic procedure often gives better results than transurethral resection but I prefer initially to give the patient the benefit of the doubt and to employ the simpler procedure, namely transurethral resection.

Nowhere have I seen reported certain grave complications it has been my lot to see in some of these children, operated upon in different parts of the country by competent urologists, these children having been seen in consultation for opinion as to further treatment. Laceration of the urethral roof down through the external sphincter with postoperative incontinence has been a complication in a few, just as it has occurred in some adults as a surgical accident in retropubic prostatectomy. Yet the worst horrors have been those boys with complete postoperative sclerosis of the entire bladder outlet and prostatic urethra down to and including the external sphincter, the last involvement precluding extirpation of the whole mass of scar. The total occlusion of the prostatic urethra in this large sclerotic mass renders any thought of palliative transurethral resection out of the question. Here permanent drainage by cystostomy must be relied upon to preserve life. Presumably extensive periurethral and adjacent perivesical leakage and infection or phlegmon explain such massive localized postoperative sclerosis.

In summary, in my own management of infants and children with contracture of the bladder neck I prefer to employ transurethral resection in at least 90%, and I use this method in all cases of prostatic urethral valves and hypertrophy of the verumontanum. The procedure is a relatively simple one with good visualization, minimal blood loss, absence of surgical shock, offers short hospitalization (3 to 4 days usually), rapid convalescence, and a more benign operative and postoperative course than when the same condition is similarly relieved in an adult. By contrast, I am not now nor never have been a prostatic resection fanatic or even enthusiast in the treatment of prostatism in older patients, employing transurethral resection in not over 50% of these men and, preferably, and when conditions warrant, resort to more or less old-fashion suprapubic prostatectomy in most of the others. To me the retropubic approach for prostatectomy and analogous procedures seems a needlessly meddlesome way of doing a simple operation.

Supracondylar Fractures of the Humerus in Children*

CHARLES J. FRANKEL, M.D., BENNETT CAUGHRAN, M.D., and CHARLES BORZILLERI, M.D.,† *Charlottesville, Va.*

The authors discuss the end results in the treatment of supracondylar fractures in children.

LATE IN 1939 we analyzed the end results of our treatment of fractures about the elbow in children. Dunlop[1] had just published his method and we felt compelled to compare our results with those claimed by that author. We were impressed enough to pattern our treatment of all displaced supracondylar fractures along the lines suggested by Dunlop.

Fifty cases of badly displaced extension type of supracondylar fractures have been treated since 1940 by gentle manipulation under anesthesia (in the ward), repeated injection of hyaluronidase, application of skin traction, following the suggestion of Dunlop, and mild compression bandaging of the arm. Where there was moderate to serious circulatory embarrassment, skeletal traction was substituted for the skin traction.

More than 95% of the children seen were brought to the hospital from 2 to 8 hours following the fracture. Swelling about the elbow was intense in practically all of the cases and blebs developed in many in from 6 to 8 hours following admission.

Only one child required open operation because of circulatory impairment. A case report illustrates the inherent problems in the handling of this dangerous but fortunately uncommon complication. The involvement of the brachial artery was the only one to be treated in this hosiptal over a period of 15 years.

P. J. H., a 6 year old white girl, fell from a farm wagon while playing, and sustained a painful deforming injury to her left elbow. She was brought to the University of Virginia Hospital, arriving 2½ hours after the injury.

Examination demonstrated marked swelling of the left antecubital space and marked deformity. A faint left radial pulse was thought to be palpable by one examiner while another could feel nothing. X-ray examination showed a supracondylar fracture of the humerus with marked posterior displacement of the distal fragment (Fig. 1).

Thirty minutes after arrival at the hospital, the patient was given a general anesthesia and gentle manipulation of the fracture was attempted. Prior to manipulation, the color of the extremity was good but the skin temperature was slightly cooler than the opposite side. No motor weakness was noted. After closed reduction there was no return of pulse. The arm was then placed in Dunlop's skin traction (Fig. 2). The hand seemed to become warmer but was still somewhat cooler than the right hand. The radial pulse was still absent and it was felt that the

FIG. 1

Extension type on admission with circulatory embarrassment.

*Read before the Section on Orthopedic and Traumatic Surgery, Southern Medical Association, Fifty-First Annual Meeting, Miami Beach, Fla., November 11-14, 1957.

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FIG. 2

Dunlop's traction.

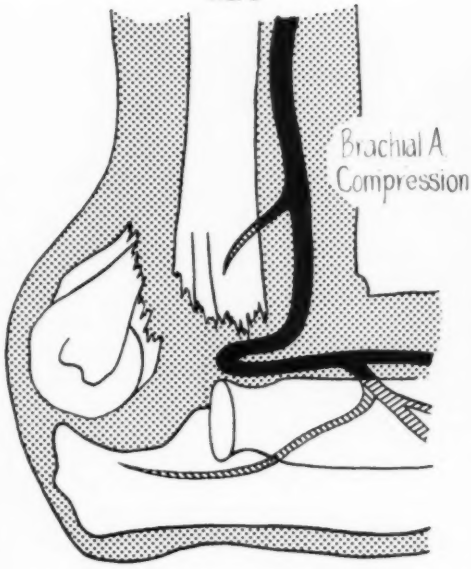
brachial artery might be in spasm from the local trauma. Intramuscular and intravenous Priscoline were tried without any effect, and the swelling persisted.

Twelve hours after the injury, and 9 hours after closed reduction, there was still no return of the pulse. The involved extremity was still cooler than the other, and while the skin circulation seemed to be fair it was felt that irreversible changes might occur if the suspected occlusion were not relieved.

The patient was taken to the operating room where, under general anesthesia, the brachial artery in the antecubital fossa was exposed, utilizing a Z-type of incision. A marked degree of edema and ecchymosis was noted in the tissue overlying the fracture. The brachial artery was found to be angulated over the sharp anterior border of the proximal fragment of the humerus and completely obstructed. Attempts at open reduction of the fracture produced further compression of the vessel rather than a release. The artery was held within the fracture by bands of periosteal tissue. These bands were released by sharp dissection and the artery was thus freed. The periosteum was sutured anteriorly to the site of fracture thus separating the artery from the fracture. The radial pulse did not return and the exposed portion of the brachial artery did not pulsate though its patency was proven by stripping blood through it. The vessel was stripped effecting partial sympathectomy (Fig. 3).

The incision was closed in a routine manner and Dunlop's traction was reapplied. This time, however,

FIG. 3



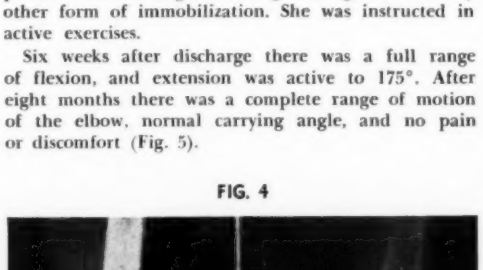
skeletal traction through the proximal ulna was substituted for the skin traction (Fig. 4, A and B).

Roentgenograms revealed maintenance of good reduction and after several days, circulation appeared to be normal, color was good, and the hand was warm, but no radial pulse was palpable until the 12th postoperative day.

Skeletal traction was maintained for 3 weeks and motion was started after about the 12th day. The patient was discharged wearing a sling, without any other form of immobilization. She was instructed in active exercises.

Six weeks after discharge there was a full range of flexion, and extension was active to 175°. After eight months there was a complete range of motion of the elbow, normal carrying angle, and no pain or discomfort (Fig. 5).

FIG. 4



(A) Reduction maintained postoperatively by skeletal traction. (B) Postoperative skeletal traction.

FIG. 5

Two year follow-up, postoperative.

Comment. The important lesson to be learned from this case is that an absence of a radial pulse itself is no indication for immediate open reduction. A careful check of the skin temperature, diminution of sensation, and increasing swelling should prompt the careful, alert surgeon to be aware of the need for possible open investigation. It may be that we were fortunate in having such good results in spite of, perhaps, having temporized too long. Certainly, open reduction 4 or 5 hours earlier would have been preferred in this case.

Skeletal traction is probably safer than skin traction in cases in which circulatory embarrassment is already apparent. It must be remembered that reduction of the displaced fragments is often responsible for further constriction of a vessel which is compressed by the reduced fragment. Meyerding[2] collected a number of cases in which there was good circulation when the fragments were displaced but poor or absent circulation on reduction. Such a finding should alert the surgeon to the possibility that the brachial artery is caught within the fracture site. (Figure 6 is inserted to illustrate a rare flexion type fracture which occurs in only 3% of the cases.)

Results

An analysis of the end results revealed that 37 children regained normal flexion and 175° of extension in from 6 to 9 weeks after discharge from the hospital. Thirty-two of the group had a normal range of motion in from 10 to 13 weeks. Five cases required from 16 to 19 weeks to obtain normal flexion and 175° of extension. We were unable to follow these last five cases long enough in order to further determine whether or not a complete range of motion returned.

Thirteen patients had minor loss of the carrying angle. Rotation of a varying degree had been present, (Fig. 7, A-F) but moulding took place and function in all of these cases was excellent. Flexion and extension was normal in from 9 to 12 weeks following discharge.

Forty-seven cases treated between 1935 and 1939 were analyzed. These were all managed by early manipulation and immobilization in acute flexion. The antecubital space was left exposed and plaster immobilization was maintained for 3 weeks.

This method, surprisingly enough, gave us fairly satisfactory results and was, of course, considerably less expensive than the method of Dunlop.

In none of these cases was open surgery required for circulatory impairment. No open reduction was done for malposition. When swelling became intense, as it did in

FIG. 6

(A) Flexion type supracondylar fracture. (B) Flexion type supracondylar fracture.

23 cases, it was necessary to reduce the acute flexion to a point where the radial pulse could again be palpated. Loss of position resulted and re-manipulation had to be done after some of the swelling subsided. Thirty-two children had a restoration of normal flexion and 175° of extension in from 16 to 38 weeks. Twelve patients had about 10° of limitation of flexion, and 5 to 10 degrees of limitation of extension as end results following a year of active exercise. Three patients developed a mild myositis ossificans and there was some slight limitation of extension to 170° and flexion to 95°. The myositis cleared up sufficiently so as not to require surgical intervention. Seven cases showed a loss of carrying angle and 2 of these had delayed ulnar nerve palsy after 18 months.

FIG. 7

(A) Extension type with rotation. (B) Extension type with rotation. (C) Position after attempted closed reduction. (D) After Dunlop's traction. (E) After Dunlop's traction. (F) Follow-up 1957 (five years later).

None of the 97 or more cases developed any evidence of Volkmann's ischemic paralysis.

Our early patients were given vigorous active exercise, and were encouraged to carry sand buckets and heavy weights in the hand in an attempt to obtain rapid extension of the elbow. Our last group started motion during the three week hospital stay and were never immobilized in plaster. Active motion was continued though the carrying of sand buckets and weights was discouraged. Frankly, we were never impressed by the development of any complications following the use of these vigorous active exercises nor had we noticed any delay in progress since we stopped the use of sandbuckets.

In March of 1957, Neviaser[3] reported his complete satisfaction with the use of the older method of manipulation and plaster immobilization. He reported on 100 consecutive cases and noted no permanent nerve damage, no Volkmann's ischemic paralysis, and very little loss of function despite no attempt to get completely perfect reductions.

Maylahn and Fahey[4] reported on a series of 177 cases of supracondylar fractures, 82 of which had moderate to severe displacement. A skeletal type of Dunlop's traction was used with uniformly good results. The authors concluded that manipulation and re-manipulation was hazardous and added insult to soft tissues. They placed a screw through the proximal ulna rather than a Kirschner wire in order to avoid ulnar nerve damage. Traction applied through the screw was found to be effective. The authors maintained traction for 3 weeks and casts for 2 weeks. Active motion was permitted after that period. We finally concluded, and heartedly agree, that overhead traction was more cumbersome and less comfortable than the ordinary type of Dunlop's traction.

Conclusion

Dunlop's traction, or a slight modification of that method, is an effective means of treating badly displaced supracondylar fractures of extension type in children. In our hands, the end results have been excellent as compared to good following the use of the older method of manipulation and plaster fixation.

We have not found it necessary to use skeletal traction. We would remind you that children have been known to develop infection following the use of pins. It is our belief that pins or screws should be reserved for cases with circulatory embarrassment.

We must finally conclude that children, if given the opportunity, will regain good function. Rotation of a moderate degree will be compensated for and the return to normal architecture will be rapid and complete in most cases.

Surgical intervention is rarely called for. More often than not, surgery is interference rather than assistance.

Careful surgical judgment is needed in cases of circulatory embarrassment. There should not be too much temporizing nor should there be too rapid surgical interference. The use of enzymes and compression bandages have been useful in minimizing swelling. The reports of successful results following the use of the older methods should encourage those who have developed skill in the use of the older methods. We are not advocating Dunlop's method as the only method of treating supracondylar fracture. We simply bring it to your attention that the method can and will give uniformly good functional results.

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Discussion (Abstract)

Dr. F. L. Fort, Jacksonville, Fla. Dr. Frankel's paper is very timely for all of us treating fractures in children. Sooner or later each of us have problem cases developing in fractures of the elbow in children. The circulatory disturbances give us, of course, the greatest concern and the circulation in the limb demands priority over the fracture itself in all cases. The reduction of the fracture is of secondary importance in these few cases where there is marked impairment of circulation, swelling, coldness and absence of radial pulse in the hand with ischemia threatening.

The methods advocated by Dr. Frankel are certainly productive of good results in his hands and I think all of us can follow in the footsteps of men like him who have found safe and relatively certain procedures. The only real objection to the Dunlop type of traction in these cases with bad circulation is that he requires approximately a 3 week hospital stay, which most of my patients cannot well afford. There is some objection, on my part, to the count retraction on the upper arm with the Dunlop method

of traction as I feel that complete overhead suspension of the arm, with the elbow in full or near full extension, gives the minimum of obstruction to the return venous flow of blood toward the body and helps reduce the swelling and thereby improve the circulation in the limb better than with the elbow flexed. I have not used skeletal traction in this type of fracture as advocated by Dr. Frankel in certain selected cases, but I certainly would have no objection to it and think that I probably will find occasion to use it in some of the few complicated cases.

I agree thoroughly with Dr. Frankel that it is seldom necessary to resort to open surgery in these badly displaced fractures of the supracondylar type. If we can reduce the swelling we can manipulate the elbow gently and attain reduction without difficulty 3, 5 and sometimes 7 days after the injury occurs in these few complicated cases. I am sure that skeletal traction, likewise, would give a satisfactory reduction without open reduction. There is some danger, in my opinion, of increased amount of scar tissue formation, limited motion, and in some cases, interference with growth from unnecessary reductions and internal fixations with pins or what have you. There is always the danger of symphysis in open reductions and the scar is certainly objectionable. I thoroughly agree with Dr. Frankel after many years of observing these patients, that complete reduction is not necessary in every case, especially referred to the slight rotation of the distal epiphysis on the shaft of the humerus which frequently is very difficult to correct by any manipulative procedure. In my experience, this slight rotation of some 10 to 15° does not produce any deformity or disability and full function returns.

I note that Dr. Frankel does not advocate excessive weight carrying or heavy use of the limb, with which I thoroughly agree. In my experience the patient is his own physical therapist. He will limber up the arm with normal use of it without any particular guidance on anybody's part if just left alone. I have known ankylosis of the elbow to result from overambitious surgeons manipulating the elbows of this type under anesthesia to roughly and unnecessarily cause trauma.

The end results as published by Dr. Frankel are certainly commendable, but I think most of us can follow in his footsteps and attain equally good results by listening to or following the precepts of those who have learned the hard way how to avoid trouble in these cases. I have enjoyed the privilege of discussing Dr. Frankel's paper.

CASE REPORT

Hydrops of the Gallbladder in an Infant

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GALLBLADDER DISEASE IN CHILDREN, while relatively uncommon, is by no means rare. In 1951, Ulin[1] reviewed the literature and found 326 acceptable cases of cholecystitis in children not over 15 years of age. However, he found only one case of true hydrops of the gallbladder, that described by Narat[2] in 1940. Since then there have been 5 more cases of hydrops reported in children. In 1953 Lee and Englender[3] reported a 7 year old boy, who had this lesion which produced pyloric obstruction. Greenstein and Wesson,[4] in 1954, reported a 14 month old boy who had a large hydrops of the gallbladder. This is the youngest reported case. In 1955, McEachern, Sullivan, and Arata[5] reported massive hydrops in a 5 year old girl. More recently McGahan and Whittinghill[6] reported 2 instances of this lesion, one in a female and the other in a male child, aged 5 years and 3½ years respectively.

The rarity of this condition prompts us to report an instance of hydrops of the gallbladder in a 22 month old patient. This case is of particular interest since the usual symptoms of fever, nausea, vomiting, and abdominal pain were absent.

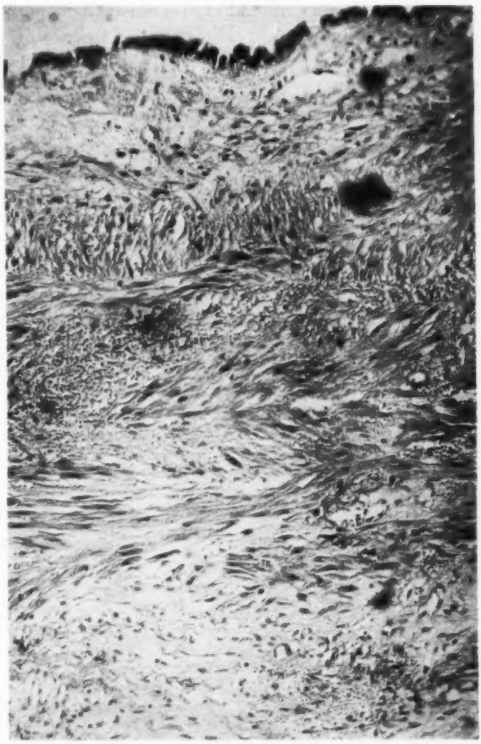
Case Report

M. F., a 22 month old colored boy, was admitted to the University Hospital, July 26, 1957, for evaluation of an abdominal mass which had been discovered on the right side upon physical examination in the Out Patient Department.

Three days prior to the examination in the Out Patient Department the child was seen in the Emergency Room because of diarrhea, slight fever, and a papular rash on his face and scalp. He was given Gantrisin and aspirin with relief of symptoms. His clinic visit was actually a follow-up visit. The birth and development of the child had been normal. He had not been a good feeder, however, and on admission weighed 22 lbs. which was slightly below normal. The child had been anemic in the past and had received iron therapy upon an earlier occasion in the Out Patient Department. No serious illnesses had been experienced.

Physical examination revealed a well developed, moderately well nourished, colored boy in no distress. The rectal temperature was 97.4° F. There was a papular rash on the face and scalp. The conjunctivae and oral mucous membranes were slightly pale. A single 0.5 cm. sized node was palpable in the

FIG. 1



Section of the gallbladder showing flattened mucosa with thickening and scarring of the muscular layers (X 100).

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right anterior cervical lymphatic chain. The lungs and heart were normal. The abdomen was soft and no distention was noted. There was a large firm mass in the right upper quadrant, which extended from the liver area down almost to the iliac crest. It was nontender, and several observers believed it to be slightly movable. The tip of the spleen was felt. A small umbilical hernia was noted. Rectal examination was normal.

Laboratory studies revealed the following: Hgb. 7.5 Gm.; WBC count 4,000. Urinalysis showed a trace of albumin and 2+ acetone on admission; subsequent examinations were negative. Stool examinations were negative for blood, ova, and parasites. A sickling preparation was negative. Liver profile tests were within normal limits. Intravenous pyelography revealed a "maltese cross" appearance of the right kidney pelvis. This was interpreted as a possible renal mass by the radiologist.

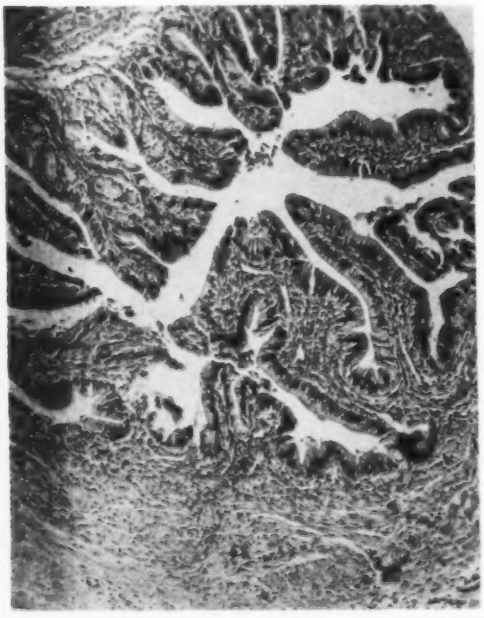
Course. The child was given two transfusions of 160 cc. and 100 cc. of whole blood, respectively, on successive days. On July 29, 1957, abdominal exploration was carried out through a right upper quadrant transverse incision. The exploration was negative except for the gallbladder which was thick walled and markedly distended. Aspiration of the gallbladder produced a large amount of white bile. Further dissection revealed the common duct, cystic duct, and right and left hepatic ducts to be normal in size and appearance. Cholecystectomy was done without difficulty. Appendectomy was also done.

The postoperative course was complicated only by a mild respiratory infection which responded well to an antibiotic. The patient has remained well to date, 10 months following operation.

Pathologic examination revealed the gallbladder to be 7.5 cm. in length and 3.5 cm. in diameter. The wall of the gallbladder was thickened. The serosal surface was fairly smooth, and the mucosal surface was somewhat irregular; no calculi were noted. The wall of the cystic duct was thickened and the lumen was almost obliterated.

Section of the gallbladder wall revealed a flattened mucosa. The muscular layers of both the gallbladder (Fig. 1) and cystic duct (Fig. 2) were thickened and scarred, and there was a diffuse sparse infiltration of lymphocytes and plasma cells. Many of the vessels traversing the gallbladder wall were dilated and congested. The pathologic diagnosis was *hydrops of the gallbladder.*

FIG. 2



Section of the cystic duct showing a picture similar to the section from the gallbladder wall (X 100).

Discussion

Hydrops of the gallbladder in the adult is usually due to a calculus obstructing the cystic duct, associated with a minimal degree of cholecystitis. Baumgartner[7] found stones as an etiologic factor in 152 of 158 cases of this disease in adults.

Apparently this is not true in infants and children. Inflammation, generalized infection, congenital anomalies and fibrous obstruction of a narrowed cystic duct have been postulated as causative factors. McGahan and Whittinghill[6] suggest the possibility of an infectious etiology secondary to infectious hepatitis. Both of their cases were exposed to this disease and one case showed evidence of liver damage in a 3+ cephalin flocculation. Rankin[8] suggested the possibility of an enlarged lymph node obstructing the cystic duct. In the present case the etiologic factor may have been inflammation with fibrosis, since the gallbladder was thick and opaque.

The signs and symptoms of hydrops of the gallbladder in the reported cases of infants and children have been, except in one case, those of nausea, vomiting, abdominal pain and tender abdominal mass. Greenstein and Wesson's[4] case exhibited none of these symptoms.

The present case is the second reported one in which characteristic symptoms were absent. He also is the second youngest patient who has been reported as having hydrops of the gallbladder.

The surgical treatment of the previously reported cases was cholecystectomy in all except one case. Narat[2] simply aspirated the gallbladder and then closed the abdomen.

No bad effects of cholecystectomy in children have been reported. Cholecystectomy would appear to be the treatment of choice for hydrops of the gallbladder.

Summary

A case of hydrops of the gallbladder in a 22 month old infant has been reported. This case seems of particular interest because the usual presenting symptoms of gallbladder disease were absent. Despite laboratory and roentgenologic studies abdominal exploration was necessary to make the diagnosis and correct the condition.

Although hydrops of the gallbladder in childhood is rare, it should be considered in the differential diagnosis of abdominal masses in infants and children.

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Respiratory Stimulants*

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Respiratory failure is a not uncommon clinical phenomenon in the practice of every doctor. The outcome in terms of life is very often dependent upon the right treatment.

THE DAY IS GRADUALLY PASSING when a physician confronted with respiratory failure instinctively reaches for an ampule of a stimulant. It is being recognized more and more that the lifesaving step is to immediately institute artificial respiration with the most effective method available at the moment. Respiratory stimulants, if used, should be used as adjuncts to artificial respiration. There are two schools of thought concerning the use of stimulants in respiratory emergencies. Some clinicians feel they are without benefit and may actually do harm; others feel that they are worthy of trial if not beneficial.

Situations requiring respiratory resuscitation fall into one of two categories: those caused by central nervous system depressants, and those in which drugs are not involved. Into this latter category fall respiratory failure due to anoxia, carbon dioxide excess and mechanical factors, such as increased intracranial pressure from hemorrhage, edema and so on. In the former category are placed situations caused by the use of anesthetics, hypnotics, narcotics and, on certain occasions, noxious substances elaborated within the body due to disturbed metabolism. Stimulants, for reasons to be explained later, are of little benefit when respiratory failure is due to anoxia, excess of carbon dioxide or mechanical factors. They are only of benefit in situations in which drugs are the causative factors. The respiratory center is usually the first of the vital centers to be inactivated by an overdose of a central nervous system depressant. Cellular activity in the centers is restored when the drug is removed, unless the overconcentration has caused irreversible changes. Central nervous system depressants are of two types, the volatile and the nonvolatile. Volatile drugs, such as ether, cyclopropane and chloroform are readily removed by artificial respiration if the circulatory system is intact. The pressure gradient is reversed by decreasing the alveolar tension and the drug passes from the cells, to the blood and to the alveolar air into the outside atmosphere. Stimulants are not necessary in overdosage from these drugs. The problem of overdosage is more complex when dealing with the nonvolatile drugs. The ability of the organism to detoxify or eliminate the drug determines whether or not recovery occurs. Some believe that recovery will eventually follow by merely using supportive measures, such as sustaining the circulatory system and pulmonary ventilation without the use of stimulants. Others feel that pharmacologic antagonists should be used in addition to supportive measures. We subscribe to the latter view. After considerable experience we have found that in certain cases the circulation ultimately fails unless stimulants of some sort are used as adjuncts to supportive measures.

Drugs used to antagonize depression of the central nervous system are called *analeptics*. The word analeptic is of Greek extraction and means restorative. Recently the term antinarcotic has also been introduced to single out the analeptics which reverse principally the opium alkaloids and their synthetic allies. Analeptics are stimulants to the central nervous system and act specifically upon the respiratory center and possess a degree of controllability which makes them suitable as therapeutic agents to overcome respiratory depression. Certain stimulants of the central nervous system are not suitable as analeptics. Procaine, for example, is a central stimulant but is useless as an analeptic because it lacks specificity in regard to the respiratory center. Strychnine, like-

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wise, is a stimulant but acts primarily on the spinal cord where its action is of little value. Clinically, suitable stimulants may exert their action on the medullary centers either directly or reflexly. Most stimulants of the central nervous system have a primary site of action where they appear to act first in therapeutic doses. Other areas may be stimulated by larger doses and a general effect follows. Caffeine in small doses stimulates the cerebral cortex. Large doses are required to stimulate the medullary centers. For this reason it is of little value as an analeptic. Some drugs, atropine for example, appear to act in a diffuse fashion and their action cannot be localized. Large or repeated doses of stimulants to the central nervous system may cause depression after the initial stimulation. This is a characteristic of most stimulating drugs. Carbon dioxide, for instance, stimulates the respiratory center in concentrations up to 5 or 6 per cent. Concentrations of 10% or more cause depression characterized by narcosis and even anesthesia.

Analeptics may be placed into four groups according to their mode of action. (1) Drugs whose action is primarily on the cells of the medullary centers. Picrotoxin, nikethamide (Coramine) and Metrazol act primarily on the medullary centers. Larger doses stimulate the cord or the structures above the medulla and produce other symptoms besides respiratory stimulation. (2) Drugs whose action is on the vital centers is a reflex one. Most important of this type are substances which act on the carotid and aortic bodies. These in turn reflexly stimulate the respiratory center. Lobeline, cyanide derivatives and nicotine stimulate the chemoreceptors. It is noteworthy that sensory nerve stimulants, such as ammonia, subcutaneous ether and camphor in oil reflexly stimulate the central nervous system. They act when a mild state of depression exists. In severe depression reflex stimulants are of no value. Physical agents such as cold, slapping, pressure on superficial nerves, and dilatation of the sphincters may also reflexly stimulate the nervous system when it is mildly depressed but are of no value when depression is severe. Recently workers in the field of psychiatry have become enthusiastic concerning the reversal of barbiturate narcosis by reflex stimulation with electric currents directed toward the brain by the application of electrodes to the scalp. The Reiter apparatus is one such device in vogue. Its value for overcoming depression of the nervous system is questionable. A severely depressed central nervous system does not respond to reflex stimulation or to physical stimuli, even electrical. (3) Drugs which improve the cerebral blood flow and restore the activity of vital centers by overcoming medullary anemia which may accompany failure of the circulation. They usually cause an elevation in blood pressure by increasing the peripheral resistance or improving the cardiac output or both. Such drugs are rarely effective in overcoming drug induced central depression. They are, however, useful if used promptly after symptoms develop in overcoming depression caused by hypotension of neurogenic origin, such as encountered in spinal anesthesia or after the use of ganglionic blocking agents, sympatholytic drugs and narcotics. (4) Drugs which have a dual action. They stimulate both the vital centers and improve the medullary blood flow. Ephedrine and desoxyephedrine are examples of drugs which possess a dual action. Some overlapping of action exists between the drugs in this and the first group. The vascular effects of drugs in the first group are usually of little clinical significance.

The mode of action of analeptics is not known. Most of the available evidence points to an effect on the oxidative processes in the cell. Depressant drugs most likely interfere with the utilization of oxygen by the cells. The analeptic may displace the depressant drug from combination with the dehydrogenase or it may act as a co-enzyme and thus restore activity. Metabolites ordinarily utilized by the cells, such as glucose, are catalyzed by enzymes inhibited by the depressant drug. Several years ago the suggestion was made that narcosis could be reversed by supplying a metabolite which the cell could use and which is catalyzed by an enzyme system not activated by the depressant drug. Oxidation could then proceed along the newly initiated path. Sodium succinate was introduced with this in mind to reverse barbiturate narcosis. The succinic acid could be oxidized by enzymes which were not depressed by the drug present in the body and activity would be restored. *In vitro,*

succinates do reverse narcosis but not in the intact animal.

Analeptics usually cause respiratory stimulation only if preceded by a depressant drug. Picrotoxin, for instance, may be given to unanesthetized dogs to the point of convulsions, without the appearance of respiratory stimulation. On the other hand, in an animal lightly narcotized with a barbiturate, less than the subconvulsive dose of picrotoxin causes pronounced respiratory stimulation. Analeptics do not overcome depression of the nervous system due to anoxia or asphyxia, as has been mentioned previously. The stimulating action of an analeptic is not neces sarily confined solely to the respiratory center. The vasomotor center and the vomiting centers are frequently stimulated also. Nausea and vomiting and some elevation in blood pressure may occur. Considerable emphasis has been placed on the effect of analeptics upon the heart. Little if any increase in cardiac output is noted in most instances following administration of the currently used analeptic drugs. If an increase does occur it is usually not of clinical significance.

If the drugs are used to excess, the stimulation may be widespread and convulsions may follow. Analeptics may cause convulsions when used for mild depressions. A latent or lag period is a feature common to all these drugs. The lag period, that is, the period from the moment a drug is injected until the stimulation is manifest varies with each drug. In severe depressions peak effect is not pronounced and is usually short-lived, if it appears at all.

The following arguments are offered by clinicians who are opposed to the use of analeptics: (1) They neither accelerate the destruction of nor facilitate elimination of the depressant drug. The body is confronted with the task of eliminating two drugs instead of one after the use of stimulants. Studies with radioactive tracer substances substantiate this contention. (2) The analeptic causes depression after the stimulation which is superimposed upon the depression caused by the hypnotic. This is certainly true when the quantity is excessive and convulsions result. Depression invariably follows convulsions induced by analeptics. (3) Analeptics increase the oxygen consumption of the cells already depressed by a coexisting anoxia. Stimulation increases metabolism. An increase in metabolism increases oxygen consumption. (4) Stimulation is accompanied by side actions, such as nausea, vomiting, tremors, twitchings, elevations in blood pressure and so on. (5) Convulsions may follow the inadvertent administration to a patient who is mistakenly assumed to be overdepressed.

The most important and the accepted analeptics are Metrazol, nikethamide and picrotoxin. Recently several drugs have been introduced as analeptics and antinarcotics. Among these are nalorphine, levallorphan, Daptazole and Megimide. Metrazol and nikethamide have been accepted standards. They are effective in mild depressions but have been found to be limited in their value for more prolonged depressed states. Picrotoxin has been widely used for the treatment of barbiturate overdosage. Until the recent introduction of Megimide, it was the analeptic of choice in these prolonged depressions, particularly that due to longer acting barbiturates. However, Megimide promises to be superior. In passing it is well to mention that picrotoxin is a potent, long-lasting stimulant. A plateau or peak effect is gradually attained, anywhere from 5 to 20 minutes after injection. This is followed by a sustained effect as long as 30 minutes. The dose varies with circumstances. It can only be determined by cautious fractionation of 2 or 3 mg. portions intravenously at 2 or 3 minute intervals until signs of arousal appear. Benzedrine and caffeine are not clinically useful as respiratory stimulants because they act primarily on the cortex and have little effect on the brain-stem. They may be used for overcoming the drowsiness present in recovery phase of depression from barbiturates and other nonvolatile drugs. Atropine has been suggested as a respiratory stimulant but its action is too feeble to be of value in depressed states in doses which do not cause extreme degrees of anticholinergic activity.

The analeptic of interest at the moment is Megimide (Bemegride NP-13). This derivative is a glutarimide (beta ethyl methyl beta glutarimide). Chemically it is allied to the hypnotic Doriden. It is not unusual to find that a slight change in configuration of a molecule of a hypnotic converts it to a convulsant. This has been noted with the

barbiturates. The exact mode of action of Megimide is not known. When it was introduced it was believed to act by competitive inhibition and to displace the barbiturate from the brain cells. More recent observation indicates that it behaves like other analeptics and its action is one of direct stimulation of the brain stem. The hypnotic effect of barbiturates can be terminated by the intravenous injection of fractional doses of 50 mg. over intervals of several minutes. Reports of successful awakening by the use of Megimide of patients who have ingested large doses of barbiturates with suicidal intentions are appearing in the literature. Indications are that the drug may supersede Metrazol and picrotoxin for overcoming the depression due to barbiturates and similar acting hypnotics. The drug has been used at the Charity Hospital for 35 patients admitted with Doriden, barbiturate, and meprobamate (Miltown and Equanil) overdosage. The drug differs in its action from picrotoxin in that the patient awakens and is able to walk and converse and does not lapse back into unconsciousness. When picrotoxin is used the action seems to be primarily on the brain stem. The sensorium is cleared little until most of the drug is eliminated. Patients in whom the diagnosis of barbiturate poisoning was suspected but not established awakened sufficiently to give a history of the illness and tell the physician what drug and how much was taken. However, the drug has not been universally effective. Complete arousal has only been obtained in approximately 75% of the patients in whom it was used. In the remainder the ventilation improved and the reflexes returned but recovery was more like that obtained with picrotoxin.

Nalorphine, often referred to as an antinarcotic, is chemically allied to morphine. The drug differs in many respects from the aforementioned analeptics. It is primarily effective in reversing the depression caused by opium alkaloids and synthetic narcotics. Some feel that its action is one of competitive inhibition and that it displaces the narcotic from receptors in the nervous system. When used alone it manifests pharmacologic effects characteristic of a narcotic with a feeble action. Unlike the other analeptics the peak is established within several minutes and is sustained so that repeated administration is not necessary once the reversal has occurred. It differs in this respect from Metrazol, nikethamide and picrotoxin. The drug is suitable for antagonizing respiratory depression due to the opiates, morphine, codeine, dihydromorphinone (Dilaudid), Dicodid, heroin, metapon and the synthetic narcotics, meperidine, Dromoran, alphaprodine and methadon. It is ineffective for depression due to the volatile anesthetics and the nonvolatile, non-narcotic drugs, such as chloral, paraldehyde and the barbiturates. As a matter of fact it may enhance the depression due to these drugs. The allyl counterpart of Dromoran, levallorphan (Lorphan) is as effective as nalorphine for the narcotics in smaller doses (one-tenth to one-fifth of the dose on the milligram per milligram basis). The drug exerts the same responses as nalorphine. Ordinarily 5 mg. of nalorphine intravenously causes some increase in minute volume exchange in a patient depressed by morphine. Ten milligrams is sufficient most of the time. When 10 mg. fail to induce a response the probability is that the depression is not due to a narcotic. It is unwise to exceed a 15 mg. dose. Recently British workers have advocated the use of Daptazole (diamino-phenyl-thiazole) as an antagonist for the narcotics. This behavior is said to be similar to nalorphine. Clinical experiences in this country are limited.

Some consider carbon dioxide an analeptic. During drug induced respiratory depression the total blood carbon dioxide content and carbon dioxide tension are elevated. The depressed respiratory center is incapable of responding to carbon dioxide in any amount. Administration of additional carbon dioxide is not only useless but may be harmful because it may further enhance the existing respiratory acidosis and it may cause circulatory derangements and further depression.

Summary

When respiratory failure occurs the lifesaving step is to administer artificial respiration immediately. Respiratory stimulants should be used as adjuncts to the artificial respiration.

Respiratory stimulants are referred to as analeptics. They are of little benefit when respiratory failure is due to anoxia, excess of

carbon dioxide, or a mechanical factor, such as increased intracranial pressure. They are unnecessary in the treatment of respiratory failure due to volatile anesthetics, such as ether, cyclopropane, etc., because the concentration in the blood can be reversed by artificial respiration. They may be of benefit if depression is due to the nonvolatile drugs, such as the barbiturates and similar hypnotics and the narcotics.

The recently introduced analeptic, known as Megimide, appears to be superior to picrotoxin in the treatment of barbiturate overdosage. The patients are aroused sufficiently to give a history and discuss the dosage and which drug was taken. The antinarcotic drugs Nalline and Lorphan are suitable for the treatment of depression due to the opium alkaloids and the synthetic narcotics. They are ineffective for the treatment of barbiturate overdosage and overdosage to similar hypnotics.

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Discussion (Abstract)

Dr. Ralph S. Sappenfield, Miami, Fla. I feel it a privilege to open the discussion on a paper written by those of the Department of Anesthesiology, Charity Hospital. This paper as those of the past which I have discussed, is clear and concise having presented both sides of the question.

I would like to be somewhat more emphatic on one statement and say that, "Stimulants are of very little or of no benefit when respiratory failure is due to anoxia, CO_2 excess or mechanical factors" instead of "little benefit."

Another point which bears repeating,—stimulants should not be used when the central nervous system depressant is a volatile agent. Reversal of the pressure gradient and the proper supportive therapy are sufficient.

When the depressant is a nonvolatile drug, we too feel that a pharmacologic antagonist should be used but not forgetting supportive therapy. Nor should the antagonist be used with the idea of replacing the supportive therapy. All too often when one is used the other is neglected.

Metrazol is the drug of our choice for medullary stimulation having a wider margin of safety and a broader spectrum of effectiveness as far as depressants are concerned. In prolonged and severe depressions we use picrotoxin and it has been found to be a potent, long acting stimulant. In our hands Coramine is of limited use and with a wide variation in effective dosage. It has a narrow margin of safety.

We have not had Megimide nor an occasion to use it since talking to Dr. Adriani about it. After hearing Dr. Kerr I would like to know more about it and to see if it would show the promise in our hands that it shows in theirs.

Again, I appreciate the opportunity and the privilege of discussing this paper and I wish to thank Dr. Kerr for presenting it to us.

The Role of the Federal Government as it Relates to Medicine*

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I APPRECIATE THE OPPORTUNITY to join you today and to share with you some of my thoughts on matters of national concern in health and medical care. Actually, I believe I ought to amend that statement to include mutual as well as national concern. For the subjects I will touch on today are of great moment to you in the private practice of medicine as well as to us in government and to our colleagues in universities, research institutions, and hospitals.

You in the Southern Medical Association are, I believe, as aware of the interdependence of health matters as you are of the emergence of new needs and new trends. Your fine headquarters building now going up in Birmingham, Alabama, the excellence of "The Southern Medical Journal," and the vitality of these meetings are all evidence of your forward looking response to these trends.

You will agree, I am sure, that the most pervasive and influential factor of modern times is change. All elements of life are affected by change, and medicine perhaps most profoundly. As has been so well pointed out by Dr. Franklin D. Murphy, Chancellor of the University of Kansas, medicine, being a blend of the physical and natural sciences on the one hand, and of the social sciences on the other, has been affected tremendously by the social and scientific revolution through which we are passing.

Within the professional lifetimes of most of us here almost incredible new scientific knowledge has developed. This knowledge has enabled us, as physicians, to save lives from conditions once invariably fatal and to reduce greatly the seriousness of many other illnesses. We have witnessed dramatic developments in chemotherapy and spectacular achievements in surgery. Across the Nation, maternal and infant mortality rates continue to reach new lows. We can prepare for and manage erythroblastosis; we know how to avoid blindness from retrolental fibroplasia; we have a means for preventing paralytic poliomyelitis; and childbirth has been made easier as it has been made safer.

Yet, as many of our serious medical and health problems come under control, others rise up to tax our ingenuity. Some of these arise from our very successes; retrolental fibroplasia was an example of this. Others are fostered by the way we live—by environmental influences and the pace of our lives.

Never before, however, has there been such widespread optimism that problems in the field of medicine—including the seemingly impossible—can and will be solved. It seems quite clear that the people of this country will continue to insist on the fullest possible utilization of available resources—private as well as public—in the never ending struggle against disease and disability.

While we have been enjoying the products of a national medical research effort (which in the past year cost about $330 million), research in nonmedical fields has been going along at the rate of about $7 billion a year. While much of this is for national defense, much of it also is research on automobiles, washing machines, television receivers, cameras, and a thousand and one other consumer goods. Recent events suggest that the security of our country may dictate even greater expenditures for research and development in national defense and related fields. One of our most persistent challenges is to maintain a proper balance among all forms of research so that the over-all research effort will be of maximum benefit to our society.

Certainly, medical research has participated prominently in the tremendous surge of new knowledge which has characterized the past

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few decades. Since World War II, in fact, medical research expenditure from all sources have increased more than fourfold. Of the $330 million currently being spent for this purpose, approximately one-half is contributed by the taxpayers through the federal government. As you know, most of these federal funds are distributed as grants to universities, medical schools, hospitals, and other nongovernment research institutions.

In view of the increasing magnitude of research, and how much is at stake in its progress or shortcomings, Secretary Folsom last August appointed a group of consultants to advise him on the present status and future needs of medical research and medical education. Under the chairmanship of Dr. Stanhope Bayne-Jones, former Dean of the Yale Medical School, this group is reviewing not only the research activities of the Department of Health, Education, and Welfare, but the medical research and medical education situation in the country as a whole.

The responsibility of the federal government in medical research is widely known and recognized. As we in health and medicine realize so well, research has paid dividends far beyond its cost, and the increased public and private support of research is cause for gratification.

What is not as well understood is the role of government in other health areas, and particularly the relationship of government to the private practice of medicine. There apparently is widespread uncertainty on this subject, and one hears repeated expressions of anxiety over something called "government control." Such things as the new medicare program for dependents of military personnel and the medical care activities of the Veterans Administration are fearfully cited as encroachments on private practice. Then comes the inevitable question: When are we going to "socialize medicine"?

Although the present administration is interested in doing whatever it can to stimulate better health protection for all Americans, I can assure you it has no desire to encroach on private practice or to "control" medical care. In our society, "government" is the people. And the provision of medical care to veterans, for example, is a matter of national policy which reflects the will of the people expressed through their elected representatives. The responsibility of the executive branch of the government is to carry out the mandate of the people by administering, as efficiently and economically as possible, medical and hospital care programs for certain segments of the population.

I have been privileged over the years to observe medicine as a practitioner, as a dean, as a medical administrator, and now as a government official. And I should like to make a categorical prediction that the private practice of medicine is an American tradition not likely to be replaced. I believe, too, that for a substantial portion of the people of this country, the family physician will continue to hold the principal role in providing care.

This does not mean that we will not witness changes and innovations in the organization, administration, and method of payment for medical care. Nor does it mean that we should abandon experiments and new ventures in favor of the status quo. Certainly, private medical practice has changed and will continue to change with the times. This extends all the way from the adoption of better business methods in private practice to group practices of varying size and character.

Many of these plans offer distinct advantages and are helping to meet the medical care needs of certain groups in this country. I believe, therefore, that Americans should be free to choose the method by which they wish to have their medical care provided—through a group plan or through a private practitioner. By the same token, physicians should be free to select the manner in which they wish to practice their profession.

In any event, the only important criteria are: that the patient receive good medical care, that neither the physician nor the patient be exploited, that the cost be reasonable in terms of the service rendered and the ability of the patient to pay, and that the conditions under which the physician provides the service are such that they do not interfere with or impair the free and complete exercise of his professional judgment and skill. You will note that I have quoted in part from the Principles of Medical Ethics adopted by the American Medical Association at its convention in New York last June.

One of our great national concerns is that the abundance of medical knowledge be made

available to as many people as possible. This, of course, involves the question of the costs of medical care, which have now reached an all time high. Much of this results from the tremendous rise in the cost of operating our hospitals. Although physicians' fees have increased to a lesser extent, there has been a substantial increase in the demand for physicians' services, owing to a wide variety of factors—not the least of which is the great progress in technology.

In this era of great prosperity, however, there are large numbers of people in America who, without benefit of insurance, are unable to meet the cost of catastrophic illness; or the cost of many of our miraculously successful diagnostic and therapeutic procedures; or, in many cases, even hospitalization for the simplest procedure. A few significant figures will, I believe, bear out in striking manner the point I am trying to make.

In the United States in 1955, about 48% of all families had incomes below $5,000. About 4 million, or approximately 9% of all our families, had incomes of less than $2,000.

Of even greater significance is the fact that in early 1957 one-quarter of all American families had no cash savings. More than half had less than $500. And only one-quarter had savings of $2,000 or more. Furthermore, consumer credit relative to the size of consumer income after taxes is now double what it was a decade ago.

Several things are abundantly clear. Most people are ill prepared to meet major medical expenses. Many lack the cash reserves even for not unusual items of medical expense. And several large groups in our population have very limited resources with which to meet even minimum necessities of medical care. These are among the economic realities that we must face in dealing with the many and varied problems of disease and disability. The best knowledge, personnel, and facilities in the world will accomplish little if people cannot afford to pay for medical care. As a people, we will never be content with a situation in which the great advances in medicine are not in some manner available to all.

It is the conviction of the present administration that voluntary health insurance is the best means of helping people meet the costs of medical care and at the same time of maintaining a system of free enterprise among those who provide this care. A tremendous job has been done in reaching 115 million Americans—about two-thirds of the population—with some type of prepayment plan for hospital care. This is about a ninefold increase in only 16 years.

However, there still are about 55 million Americans—one-third of the population—without hospitalization insurance of any kind. About 70 million people have no surgical insurance protection. And about 2 out of 3, almost 107 million people, lack insurance against general medical expenses.

There are special problems, as you know, in providing health insurance for certain groups in the population. For example, about half the people aged 65 or over, nearly three-fourths of those employed on the farm, and about two-thirds of those in families with incomes under $2,000 a year have no health insurance of any kind.

It is the job of all of us, the medical profession, the insurance industry, the government, and the people who use medical services, to join together in an effort to extend voluntary prepaid health insurance to those not now protected and to broaden the types of coverage now available. To this end the administration has requested Congress to enact legislation which would permit smaller insurance firms or nonprofit associations to pool their resources in order to improve and expand their services through sharing of risks. This obviously is not a panacea for the broad problems of health insurance, but it would enable organizations with limited resources to undertake experimental and developmental work and thus offer better coverage. No hearings have been held on this proposal, but we are hopeful that it will be considered after Congress reconvenes in January.

Only recently the Board of Trustees of the American Medical Association began a series of meetings with insurance industry presidents on the broad issues of health insurance. I am certain this marks the beginning of a concerted and hopeful effort by organized medicine to join with the insurance industry in seeking ways to solve some of the economic problems of medical care through better and

broader voluntary health insurance. Individual physicians, too, can help by encouraging their patients to obtain, within the limits of their means, the broadest health insurance coverage currently available to them.

Certainly, a sound program of medical research with balanced support from universities, foundations, industry, private philanthropy, and the federal government must be a continuing part of our national health program. In like manner, we must constantly seek the means of bringing better health services to more and more of our people. In this picture we should at all times be aware of the phenomenal rate at which our country is growing. Our population is increasing at the rate of almost 3 million a year, and we have gained about 27 million people within the last 10 years. The conduct of research and the provision of health services and patient care require trained people. Physicians and allied scientists, nurses, technologists, and the other members of the vital team are in short supply.

This represents a great challenge for the Nation's professional schools. We in the Department of Health, Education, and Welfare are deeply concerned with the problems facing medical education.

In the past 10 years, research grants by the Public Health Service to nonfederal institutions have increased from $8.5 million to a current level of almost $100 million. Altogether, research grants from all sources provide one-third of the total income of medical schools, and half of these grants come from the Department of Health, Education, and Welfare. As research work expanded, it soon became clear that a balanced and effective program would require more emphasis on the training of research personnel. And so the Department's support for the training of promising research scientists has been increased, from $9 million in 1953 to $39 million this year. More recently, the lack of adequate facilities threatened to become a bottleneck, and a new program was launched to provide $90 million over a 3 year period for matching aid in building health research facilities. So far, more than 200 grants have been made, amounting to more than $56 million.

In an address before the National Fund for Medical Education a few weeks ago, President Eisenhower put the need in these memorable words: "From our medical teaching institutions—the schools and their affiliated teaching hospitals—come every year the future guardians of our people's physical and mental health. A healthy citizenry is the first defense line of the Republic. A healthy citizenry is capable, in peacetime, of expanding our economy; in times of critical tension, of carrying on without cracking; in times of conflict, of showing the endurance and stamina upon which victories are built."

I believe the goal of a healthy citizenry is a challenge to all of us in the health profession, both in and out of government. It is a challenge that calls for concerted and cooperative action by all groups that have a stake in better health. We in government would like to be a helpful partner in this vast enterprise. The results of the years of partnership between the government, the people, and the medical profession are evident in every phase of national health. We need only to move forward together to achieve even better health care for the people of this country.

The Reduction in Incidence of Operative Obstetrics by Intravenous Pitocin*

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The authors have demonstrated in their work that the use of this oxytocic has reduced the incidence of the need for operative procedures in delivery.

AT THE JOHN GASTON HOSPITAL (teaching hospital of The University of Tennessee) intravenous Pitocin* is used in a number of obstetric conditions, namely: (a) to correct uterine inertia, (b) to induce labor in toxemia, (c) as a means of treatment in certain cases of abruptio placenta and marginal placenta previa, and (d) to control postpartum hemorrhage. Elective induction for convenience is not done on our service. Pitocin has been used principally for the correction of uterine inertia in desultory labor. In order to measure its value with some degree of objectivity, we have compared the results of the past 3 years, when Pitocin was used on our service, with those of the previous 3 years when intravenous Pitocin was not used. There are many reports in the literature[1-8] concerning the use of intravenous Pitocin in labor, but we thought that this report would be of interest since it is a comparison of the results on the same service before and after its use.

Material and Method

We first began the use of intravenous Pitocin by the drip method in 1954, and have taken a 3 year period, including the years 1954-56 inclusive, for study and have tabulated the results. We shall call this interval the *intravenous Pitocin period* during which time 22,069 patients were delivered. The results were compared with those of the 3 years prior to the use of intravenous Pitocin, namely, 1951-53, which we will call the *pre-Pitocin period* when 16,400 patients were delivered. These periods are compared as to the incidence of cesarean section, difficult midforceps deliveries, forceps rotation, and breech extraction. It is the custom on our service to employ large numbers of outlet forceps for teaching purposes, and we have not included this large group in these data. Table 1 gives the results of the two periods.

Discussion

In each instance of intravenous administration of Pitocin, the solution administered was 10 units diluted in 1,000 cc. of 5% glucose in distilled water. The rate of administration was 15 to 30 drops per minute, and the patient was under constant observation of trained personnel. Stone and Gordon[9] have carefully outlined what to expect when used in this manner. Approximately 3% of the patients delivered on our service during the Pitocin period received the drug intravenously for one of the indications mentioned. Our best result was in the reduction in the use of difficult midforceps operations for both

TABLE 1

Description	*Pre-Pitocin Period 1951-1953*		*Intravenous Pitocin Period 1954-1955*	
	Number	*Per Cent*	*Number*	*Per Cent*
Deliveries	16,400		22,069	
Stillbirths	524	3.2	405	1.8
Neonatal deaths	505	3.2	507	2.4
Maternal deaths	30	0.18	18	0.08
Cesarean section rate	529	3.2	532	2.4
Difficult midforceps deliveries	43	0.26	11	0.05
Difficult forceps rotation	351	2.0	232	1.05
Breech extraction	41	0.25	38	0.17

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*Pitocin—Parke, Davis & Co., Detroit, Michigan. 1 cc. = 10 International Units.

midpelvic deliveries and rotations. We gained the impression that in some instances of midpelvic arrest and occiput posterior positions uterine inertia was a factor in failure to attain spontaneous delivery. We have not included those cases of occiput posterior that were rotated easily, manually or otherwise. Breech extractions have been reduced, and this can be attributed to the increase in uterine power brought about by intravenous Pitocin. Our cesarean section rate was reduced from 3.2 to 2.4% (uncorrected). This can be partially attributed to those cases of uterine inertia and desultory labor corrected by the use of this oxytocic. Also, we have performed fewer cesarean sections in cases of premature separation of the placenta and marginal placenta previa by rupturing the membranes and the administration of intravenous Pitocin. Our service admits a number of toxemia patients, and the induction and augmentation of labor in our preeclamptic patients has been responsible for fewer sections in this group and has helped to reduce our maternal deaths from 0.18 to 0.08 per cent. The decrease of prolonged desultory labor, among other factors, has given us better babies with a reduction in stillbirths from 3.2 to 1.8%, while the neonatal death rate has dropped from 3.2 to 2.4 per cent.

We have had some undesirable complications from the use of intravenous Pitocin. Tetanic contractions have occurred as well as tumultuous labor. In no instance has either failed to subside upon discontinuance of the intravenous drip. During the pre-Pitocin period of this study we had 14 ruptured uteri as compared to 7 ruptured uteri in the intravenous Pitocin period. There were 2 ruptured uteri associated with the use of intravenous Pitocin in which the rupture occurred in the lower uterine segments. One was in a 28 year old gravida VII, para V, abortion I, who failed to deliver a dead fetus because of uterine inertia. Intravenous Pitocin was used, and after delivery an extensive cervical laceration extending into the lower uterine segment was encountered for which hysterectomy was performed. The other case in which Pitocin could be incriminated as causing rupture of the uterus was that of a 27 year old gravida VIII, para III, who was admitted in premature labor with uterine bleeding, and was diagnosed as having a low lying placenta. Intravenous Pitocin was administered after rupture of the membranes. The uterus ruptured during labor requiring hysterectomy. Both of these patients survived. We are inclined to agree with Ferguson and associates[10] that such accidents as cited should not preclude the use of Pitocin in the management of labor since it possesses obvious merits. We have been cautious in the use of intravenous Pitocin in cephalopelvic disproportion, but feel that many times it is not true disproportion, but uterine inertia, and this has furthered our study of a trial of labor since we can insure normal uterine contractions with Pitocin. We do not use Pitocin in positional dystocia, previous cesarean sections, or myomectomy. We have employed it in grand multiparity and breech presentation, but have done so with increased caution. The above cited cases have been our only serious complications after having used intravenous Pitocin several hundred times. We are of the opinion that intravenous Pitocin is a good adjunct to our obstetric armamentarium.

Conclusions

(1) The use of intravenous Pitocin on the obstetric service of the John Gaston Hospital has resulted in a reduction in operative interference.

(2) The results obtained on our service have been impressive enough to warrant continued use and study of this oxytocic.

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Discussion (Abstract)

Dr. Thad H. Doggett, Miami, Fla. The use of

intravenous Pitocin in obstetrics is continuing to increase. In this paper I think the significant point is not that its use especially diminished the operative incidence and increased fetal salvage, which must always be the case in order to justify its use. The greater significance is that its use has not *increased* maternal and fetal mortality. There is a marked tendency to use the Pitocin drip in many complications hitherto considered amenable only to surgery. The pendulum of thought, as it has often done in the past, will probably continue too far in this direction and the opponents of the Pitocin drip will gather increased evidence against its use. If we view the present, however, we must realize that we have just passed from a time when the injudicious use of Pitocin brought on tragedies. The discipline which resulted restricted its use and confined it for the most part to the second and third stages of labor. Now that the pendulum is swinging in the other direction there is much to be learned, and the true position of the Pitocin drip in obstetrics is becoming clearer. Its greatest value may well lie in its application to the first stage of labor.

Of primary concern in the use of intravenous Pitocin is the physiologic alterations which it produces. From my own experience I can say that when the drip is used to "speed up" an otherwise normal delivery, it oftentimes slows down the progress and increases the pain. In cases of borderline pelves when uterine inertia results, intravenous Pitocin oftentimes solves the problem. Likewise, as Dr. Jones stated, it often solves the problem when induction of labor in preeclampsia and eclampsia is desired. In cases of soft tissue dystocia, such as that observed in the "elderly primipara" syndrome, intravenous Pitocin is notably a failure. Generally speaking, intravenous Pitocin seems to work best, as mentioned by Dr. Jones, where uterine inertia is a complication, and I find it necessary to continue the drip on through the second and third stages to avoid complications there.

There is still to be explained the effect of intravenous Pitocin on the uterus in abruptio placenta. Obviously its effect is not the same as on the normal uterus. This is an important question to be answered in the future for if intravenous Pitocin can control uterine bleeding, even temporarily in the uterus with concealed hemorrhage, the operative management is made easier with less risk if not eliminated entirely by vaginal delivery. I would not consider that the two tragedies mentioned were produced entirely by Pitocin drip but produced perhaps by a defect in its method of administration.

It must not be implied that the Pitocin drip can be used safely in any case where operative intervention is considered. There are still cases in which I consider intravenous Pitocin definitely contraindicated. Among them might be mentioned: (1) the woman who has had a previous cesarean section and is in labor; (2) the initiation of Pitocin drip in the second stage of labor in breech delivery; and, (3) contraction ring dystocia. The report presented, however, is valuable in casting aside the previously austere attitude toward this valuable means of therapy where care in its administration is exercised.

Pregnancy of the Broad Ligament:
Report of Three Cases

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Introduction

PREGNANCY OF THE BROAD LIGAMENT is an extra-uterine pregnancy in which, following rupture of the tube, the gestational sac becomes secondarily implanted in, or extends between the peritoneal folds of the broad ligament where growth and development continue. It has also been referred to as intraligamentary pregnancy, intraligamentous pregnancy and extraperitoneal pregnancy. Since it is the rarest of all types of ectopic pregnancy and undoubtedly is often reported only as abdominal pregnancy, its exact incidence is difficult to determine. From the reported series[1-4] it can be estimated to occur once in every 300 ectopic pregnancies. In most reported series Negroes predominated. The occurrence of 3 cases of pregnancy of the broad ligament in 1955 at the E. A. Conway Memorial Hospital in Monroe, Louisiana, prompted this report.

Between July 1, 1950, and July 1, 1955, 13 other abdominal pregnancies were encountered at this institution.

Pathogenesis

For the gestational sac to become implanted between the peritoneal folds of the broad ligament, it is essential that nidation initially take place elsewhere. The most common primary site of nidation is the extra-uterine portion of the tube. With rupture along the mesosalpingeal border of the tube and extrusion of the gestational sac, the fetus can continue to develop if there is trauma only to the chorion, the amnion remaining intact. Complete separation of the gestational mass and reimplantation would be possible only if rupture occurred early. Upon expulsion into the broad ligament, should the fetus die from an impaired blood supply the amniotic sac may remain as a cystic mass, which may or may not be reabsorbed.

Clinical Manifestations

The physical findings and symptoms produced by pregnancy of the broad ligament vary with the duration of gestation. During the first trimester, rupture of the tube into the broad ligament produces clinical manifestations that may be indistinguishable from those of any ruptured tubal pregnancy. Since the amount of blood lost may be minimal and shock not a prominent feature, the condition may be interpreted as a ruptured follicular cyst. An adnexal mass is rarely palpable. Some intraperitoneal bleeding may occur at this time through the fimbriated end of the tube causing acute abdominal pain. Most reported cases have been at or near this stage.

As the gestational sac grows and develops between the leaves of the broad ligament, it fuses with the uterus medially, extending to the bony pelvis laterally and to the levator ani muscles inferiorly. If the direction of growth is more pronounced anteriorly, the parietal peritoneum may be raised from the anterior abdominal wall. The placenta is usually superior to the fetus and the round ligament courses in front of the gestational sac. The tube lies superiorly but usually becomes unidentifiable. The uterus lies on the opposite side and is frequently displaced upward. The ovary, if not destroyed by pressure, may be identified lateral to the gestational sac. At this stage the patient may complain of painful fetal movements and irregular vaginal bleeding. Indigestion, loss of weight, and painful difficult defecation may be due to compression or to intestinal adhesions to the gestational mass. Dysuria is common if the mass assumes a more anterior position.

Once the mass has attained an abdominal position, it may be identified as being sep-

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arate from the fundus. This is probably the most important physical finding; however, the fundus is frequently identified as a fibroid. The cervix is usually only slightly softened, and is often pulled upward with depression or obliteration of the vaginal fornix on the opposite side. If the round ligament can be palpated over the interior surface of the mass, it is of diagnostic aid.

Rupture of the sac, with or without hemorrhage, during the second trimester produces an acute abdominal crisis with shock. If rupture and hemorrhage do not occur, the pregnancy proceeds to "term." Pseudolabor probably begins earlier than the usual 266 to 273 days following conception. In Charlewood and Culiner's[5] series of 52 advanced extra-uterine pregnancies, pseudolabor occurred in only 17 patients.

Pseudolabor is identified by cramping abdominal pain usually associated with some bleeding. Palpation of the abdomen at this time reveals an abnormal presentation without palpable uterine contractions. Injection of small amounts of Pitocin intravenously without palpable hardening of the gestational mass has been used as a diagnostic aid. Fetal parts, easily palpable beneath the abdominal wall, have been frequently reported. The cervix fails to dilate and on occasion a decidual cast may present at the os.

Fetal death usually occurs soon after pseudolabor. In the absence of infection the amniotic fluid is gradually reabsorbed, the placenta either liquifies or becomes cornified, and the fetus undergoes mumification or calcification. The patient is frequently asymptomatic and menstruation returns after a varying interval. Subsequent pregnancy and delivery has been reported following unrecognized broad ligament pregnancy.[6] Should the gestational sac become secondarily infected, either rectal or vesical fistulas may develop and fetal parts may be discharged through these fistulas.

Diagnosis

Once extra-uterine gestation has been suspected, roentgenographic studies may be of diagnostic importance. The abnormal position of the fetus is first noticed. The presenting part is usually lower in a pregnancy of the broad ligament than in abdominal pregnancies. Repeated roentgenographic examinations may be of aid since there is a persistent attitude of the fetus in contrast to the changing position of small parts of a uterine pregnancy. Uterosalpingography can be safely done, and if the uterine cavity can be outlined, this definitely confirms extra-uterine gestation. In some cases a large decidual cast may make the result of this procedure inconclusive. On a lateral view one may see fetal parts posterior to the lumbar vertebra or gas anterior to the gestational mass, which are indicative of extra-uterine pregnancy. Pelvic angiography has been used in a number of European countries to distinguish between

TABLE 1

CHARACTERISTICS OF ADVANCED EXTRA-UTERINE GESTATION[11-12]

	Broad Ligament Pregnancy	*Unruptured Tubal Pregnancy*	*Other Abdominal Pregnancy*
1. Gestational sac	Purplish grey, covered with massive varicosities.	Similar color but varicosities not a prominent feature.	Shining, glistening membrane usually encountered, plus adherent viscera.
2. Placenta	Usually located in the superior portion of the gestational sac.	Usually located on posterior or inferior surface of the tubal lumen.	Located on some visceral surface.
3. Tube	Usually unidentifiable.	Can be identified without evidence of rupture.	May be identified separate from the gestational sac.
4.	If entire gestational sac is removed, at least sub-total hysterectomy usually becomes desirable.	Complete removal of fetal sac and products of conception can be accomplished by salpingectomy.	Gestational sac usually should not be removed.
5. Walls of gestational sac composed of	1. Peritoneal folds. 2. Vascular bed. 3. No smooth muscle identifiable throughout wall.	1. Smooth muscle bundles found at multiple sites at considerable distances from identifiable tube. 2. Edematous congested fibrous connective tissue. 3. Ciliated columnar epithelium can be demonstrated in the lining of the sac.	1. Gestational membranes. 2. Adherent visceral structure.
6. Visceral adhesions	May or may not be present.	Relatively infrequent.	Usually present.

extra-uterine and intra-uterine pregnancy, but experience in this field is limited.[7]

The diagnosis of pregnancy of the broad ligament preoperatively is extremely difficult to make. However, at laparotomy or on examination of the specimen its characteristics are distinctive. Table 1 outlines these characteristics.

Management

That extra-uterine pregnancies should be terminated as soon as the diagnosis is definitely established has almost general acceptance. This seems warranted because of the hazard of rupture and hemorrhage, the added difficulty in placental management, and, in pregnancy of the broad ligament, the remote possibility of obtaining a viable infant.

As in all abdominal pregnancies, it is generally advised that the fetus be removed without disturbing the placenta. However, in cases in which the entire gestational mass could be mobilized easily, the placenta has been removed along with the uterus with good results. Intestinal adhesions to the area or low implantation of the placenta may make this impossible.

If the placenta is left in place, according to reports in the literature, from eight months to three and one-half years are required for the mass to regress to a size where it is not identifiable by abdominal palpation. Overwhelming infection in this site has been responsible for maternal death. Late secondary infection or suppuration may occur with development of fistulas to the intestinal tract, bladder or abdominal wall.

Prognosis

The maternal prognosis in pregnancy of the broad ligament is grave. In reviewing 70 cases in all stages of development Champion and Tessitore[8] reported a maternal mortality rate of 16 per cent. Ware[9] reported a 15% maternal mortality rate in 240 cases of extra-uterine pregnancy beyond the seventh month. Shock, hemorrhage and infection are the most frequent causes of death.

As far as we have been able to determine there have been only 2 other reported cases of pregnancy of the broad ligament in which the infant survived beyond the neonatal period.[2,6] Suter and Wichser,[10] in reviewing 41 cases of viable babies in all types of extra-uterine pregnancy, reported that 38.7% showed some type of congenital deformity.

Case Reports

Case 1. J. B. H., a 33 year old Negress, gravida IV para III, whose last menstrual period occurred on Jan. 3, 1955, was admitted to the delivery unit of the E. A. Conway Memorial Hospital, Monroe, on Aug. 6, 1955, with irregular, crampy abdominal pain and a bloody show. Palpation of the abdomen failed to reveal contractions. The stage of gestation was estimated to be approximately 7 months. A palpable mass in the left lower abdominal quadrant was thought to be a fibroid. Roentgenography showed a vertex presentation with most of the fetal parts on the right side of the abdomen. Vaginal examination revealed a firm spongy mass projecting through a minimally dilated cervix, which bled profusely on manipulation.

A preoperative diagnosis of placenta previa, a malposition and uterine fibroid was made, and cesarean section was begun. A tremendous mass of varicosities was seen interspersed with firm, purplish grey areas over the gestational sac when the abdominal cavity was entered. The uterus, identified in the left lower abdominal quadrant, was about the size of a 3 months gestation. The round ligament was of spongy consistency, and coursed low in the pelvis behind the symphysis pubis. Through a relatively avascular area of the sac adjacent to the uterus an infant weighing 3½ lb. was delivered. He cried spontaneously. There were no adhesions to the gestational sac and the entire mass was removed along with the fundus of the uterus. The postoperative course was uneventful.

The specimen showed the entire products of pregnancy to be enclosed between the leaves of the broad ligament. No tube was identifiable grossly or microscopically. A large decidual cast in the fundus had been misinterpreted on pelvic examination as placenta.

The infant's head and chest showed pronounced asymmetry from pressure. The third metatarsal bone and phalanx were missing bilaterally. The infant was transferred to another hospital when 6 days old for premature care. He was reported to be making satisfactory progress at the age of 6 weeks.

Case 2. E. S., a 28 year old negro nullipara, came to the E. A. Conway Memorial Hospital, because of a rapidly enlarging, tender abdominal mass of 3 months duration. There had been gradual loss of weight, anorexia and indigestion, and during the 2 weeks prior to admission she had had increasing difficulty with defecation.

She had been married 11 years. She gave no history of missed menses but had had irregular "spotting" for 4 months.

Examination revealed an irregular tender mass rising to a point just below the umbilicus. A placental souffle was heard in the left lower abdominal quadrant. The cervix, which was small and firm, was located high in the left fornix. The right fornix was completely obliterated. On bimanual examination a mass presumed to be the fundus could be identified separate from the gestational sac. A uterosalpingogram failed to outline the uterine cavity.

On Aug. 22, 1955, while attempting to defecate, the

patient had severe abdominal pain and fainted. Following induction of general anesthesia the abdomen was entered. The abdominal cavity contained approximately 1,000 cc. of blood. The purplish grey gestational sac was covered with varicosities and adherent loops of small intestine. Through a tear approximately 4 cm. long in the broad ligament adjacent to the uterus, a fetus measuring 12 cm. (crown-rump) was delivered. The cord was ligated and the placenta was not disturbed.

At the time of discharge the placental mass was at the level of the umbilicus. Following discharge, the patient was treated as an outpatient. The placental mass remained firm and nontender, and showed minimal regression in size in 3 months.

Case 3. I. M., a negro gravida XIV, para XIII, aged 41 years, was admitted to the E. A. Conway Memorial Hospital, on Oct. 27, 1955, with fever, pain in the right lower abdominal quadrant and a foul vaginal discharge.

The date of her last regular menses was uncertain but she had had irregular bleeding since July, 1955. Pelvic examination revealed changes consistent with pelvic inflammatory disease. Considerable improvement followed blood transfusions and antibiotic therapy. However, on Nov. 11, 1955, sudden severe lower abdominal pain and weakness developed. Puncture of the cul-de-sac, revealed nonclotting blood.

The abdominal cavity was entered, and in the right adnexa a rounded soft, purplish mass, approximately 10 cm. in diameter, was found distending the broad ligament. The fimbriated end of the tube could be identified superiorly. Near this structure was active bleeding from a small tear. The gestational sac was removed intact. The immediate postoperative course was uneventful, but 2 weeks postoperatively an abscess in the right lower abdominal quadrant developed and was drained extraperitoneally.

The specimen, a round mass of grey-red tissue, measured 9 by 8 by 6 cm. Serosal surface appeared to cover the entire mass except for the pedicle and the fimbriated end of the tube. Section of the mass revealed a fetus measuring 9 cm. (crown-rump). Microscopic examination revealed smooth muscle tissue only in that portion of the wall adjacent to the grossly identifiable tubular tissue. The pathologic diagnosis was ectopic pregnancy compatible with broad ligament pregnancy.

Summary

Pregnancy in the broad ligament is the rarest of all types of ectopic pregnancy, occurring about once in every 300 ectopic pregnancies. The clinical manifestations depend on the duration of gestation. It is difficult to make the diagnosis preoperatively, but inspection at laparotomy or examination of the specimen reveals distinctive characteristics. It is generally agreed that all extra-uterine pregnancies should be terminated as soon as the diagnosis is established. The maternal and fetal prognoses in pregnancy of the broad ligament are grave. Reports of only 2 cases of pregnancy of the broad ligament in which the infant survived beyond the neonatal period could be found in the literature. An additional case is reported, and 2 other cases of broad ligament pregnancy with nonviable fetuses are described.

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Nasal Injuries in Children*

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That nasal deformities cause psychologic disturbances especially in women, and abnormalities in the physiologic functions of the nose is common knowledge. It thus behooves the attending physician to carefully evaluate nasal injuries whether at birth or in later life. Proper management at the time is essential.

Introduction

BECAUSE OF ITS PROMINENT POSITION the nose is particularly susceptible to injury. In this age of automobile accidents, athletic injuries, industrial mishaps and many other modes of injury the nose is often the site of severe trauma.

Management of nasal injuries should be the responsibility of the otolaryngologist, for only he is likely to have the fundamental knowledge of the anatomy and physiology of the nose to enable him to restore altered appearance and proper function. However, on many occasions, victims who have sustained nasal injuries are seen in hospital emergency rooms, where they are given first aid by the resident physician or general surgeon. Sometimes bony fractures involving the sinuses or nasal vault are neglected and septal displacements are unnoticed. A specialist may be consulted later when damage is concealed, or when proper repair may require more extensive surgical procedures for correction of the results of improper initial management. Nasal deformities may affect an individual's mental well-being and may result in social insecurity and economic hardship. For these reasons it is extremely important to know the proper method of dealing with a nasal injury.

General Considerations

In the management of injuries of the nose in children, the first consideration is the general condition of the child; the nasal deformity may be of secondary importance. The family is concerned primarily with the individual's survival if he has been severely injured. The physician cannot relieve this anxiety until he has made certain that there is no intracranial involvement or complication from extension. Lifesaving measures to prevent these complications must be instituted promptly. Most laryngologists are well equipped to relieve obstruction of the airway, when present, or perform tracheotomy when this lifesaving procedure is indicated.[1] If the patient shows evidence of severe shock, repair of the facial damage must be postponed until the shock has been combated.[2]

After the child has recovered from the initial injury, the parents begin to worry about the visible nasal deformity.[3] As the child grows older and becomes aware of the disfigurement, he too acquires an anxiety. The foundation of a neurosis is thus laid in his childhood and not uncommonly colors his adult personality. In females this anxiety actually takes command. In a word, such an injury in a girl, with its cosmetic disfigurement, leaves an unerasable mark on her adult personality.

Types of Nasal Injuries

Injuries to the nose that cause deformities are found in the newborn. Kirchner[4] classified these into, (1) recent (occurring during birth), and (2) prenatal (occurring as a result of forces applied to the nose during the late months of intra-uterine life). The *nasal injury occurring during birth* results from excessive pressure on the cartilaginous portion of the nose and usually consists in dislocation of the septal cartilage from the vomerian groove with resultant caudal deviation from the midline (Fig. 1).

Construction of the human nose begins in fetal life. The septum formed by fusion of the mesial nasal processes is subjected to pressure laterally from the nasal sacs and caudally from the growing palate and thus becomes subject to asymmetry, spurs and ridges, and sublation of the anterior cartilage. According

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FIG. 1

Nasal injury occurring during birth, before and after correction.

to Ersner,[5] the human cranium is larger than that of other animals because of the greater mental capacity of the human race; and the greater development of the frontal lobe and its position create a larger cranium, which may cause injury to a small part of the infant's body, such as the nose.

Ersner examined 542 newborns during the first 8 days of life and some of them during the first few hours after birth.

Asymmetry of the nose was found in 519 of the 542 newborns but such asymmetry can be attributed to the trauma of birth in only a few cases.[6]

Injuries of the nose following forceps or other operative deliveries are not as uncommon as might be assumed. The signs of a nasal fracture are definite, but even a few hours later considerable depression of the bridge of the nose becomes concealed by the edema of the soft parts. Careful palpation is necessary to determine such a fracture.

The motive power in childbirth comes from the uterus, abdominal muscles, closure of the glottis, the diaphragm and hydraulic pressure of the amniotic fluid. The uterine contractions increase gradually and at maximum activity create a pressure of 30 to 40 pounds. During delivery there is compression of various parts of the head causing temporary obliteration of the fontanels and overlapping of the cranial bones at the suture line. This pressure, which is exerted on the nose during passage of the infant through the birth canal, frequently causes separation of the cartilaginous portion of the septum from the vomerian groove. Otolaryngologists should request that obstetricians inspect and palpate every infant's nose to detect septal dislocations just as they routinely examine the newborn to determine the presence of deformities in other parts of the body.

The *prenatal nasal injury* is usually more extensive than the birth injury. It involves not only the bony and cartilaginous pyramid but also the septum. It is produced by intra-uterine pressure pushing the nose against the mother's bony pelvis during intra-uterine life. Kirchner[4] and Cottle[7] agree that in such cases instrumentation is valueless and the nose returns to the normal or nearly normal position before the infant reaches the age of 3 months.

Traumatic injuries. The vestibule of the nose is an important physiologic structure. Any injury involving the tip of the nose requires careful repair. Cottle[8] considered the ends of the lobular cartilages, cul-de-sac, nasal valve and floor of the pyriform crest as functioning structures in the modification of air streams. He further postulated that disharmony between the structures of the external nasal pyramid and the internal nose is a cause of nasal illness.

The nasal pyramid is often injured, especially in automobile accidents, when individuals are thrown forward against portions of the interior of the vehicle. The Cornell experiments[9] demonstrated the enormity of this force. In these instances the force is measured as "G" and in a 10 "G" accident the force is ten times the body weight of the individual. One can readily visualize the severity of the striking force on the face and nose.

In all cases of trauma the nasal bones, lobular cartilages and septum deserve careful study, including inspection, palpation and roentgenography. Only by these means can deformities and alteration of nasal physiologic processes be discovered and latent ill effects be prevented.

The external nasal pyramid is an attic with considerable air space, quite empty and covered by an insulating roof. It protects the internal nose from outside influences and helps retain the moisture and warmth of expired air for the benefit of the nasal mucosa. Therefore any injury, deformity or disease of the external nasal pyramid becomes the responsibility of the rhinologist, who is dedicated to the prevention and treatment of nasal diseases.[10] If the nasal pyramid has been fractured, it is important to correct any deformities for physiologic as well as cosmetic reasons.

Management of Nasal Fractures

Most nasal fractures occur in the lower half

where the bone is thin. They frequently include the thin portion of the ascending process of the superior maxilla. Fractures occur in the upper half less often because the bone is thick and quite solid. Rarely are the nasal bones disarticulated in their upper third because they are held firmly in a facet created by the frontal bone and the ascending process of the superior maxilla. For a fracture to occur in that region, the victim must sustain a crushing blow that separates the ascending process and permits the bone to be pushed in or to be knocked out laterally. In patients with a depressed fracture in this area it is important to rule out cerebrospinal rhinorrhea, as it has been proved that such fractures go through and involve the perpendicular plate of the ethmoid in the region of the cribriform plate. Cerebrospinal rhinorrhea is not a contraindication to reduction. Instead, the fracture should be reduced as soon as the patient is able to tolerate the procedure and the bones should be immobilized. Immobilization permits this leak to be sealed off as early as possible, and thus prevents secondary invasion of the meninges.

Most simple nasal fractures may be reduced by insertion of an elevator in the nose, followed by application of external pressure and manipulation. An external dressing, consisting of adhesive strips over which a stent has been molded, is fixed by adhesive tape. Fractures that have caused the nasal pyramid to lose the support of the septum may require a fixation splint introduced into the nose and supported by a head cap.

A common mistake in attempting to reduce nasal fractures is to place the elevator too high within the nose so that it either rests upon the unbroken portion of the nasal bones or beneath the nasal spine, which is part of the frontal bone. Extreme care should be taken to place the elevator beneath the displaced fragments only.[11]

Open reduction of depressed nasal fractures is now advocated by some. The rhinoplastic approach also deserves much consideration. In my experience it offers more technical advantages and more permanent cosmetic results. By uncovering the dorsum of the nose and exposing the nasal bones to direct visualization the surgeon can manipulate the fractured bones (and fragments if comminuted) and thus restore alignment more perfectly than by means of tactile methods. Hematomas, if encountered, can be evacuated by suction or forceps. Concomitant septal hematoma, dislocations or fractures are more easily treated through the open surgical approach. Postoperative rhinoplastic dressings of tape and stent are used.

Old healed fractures require complete rhinoplastic procedures including mesial and lateral osteotomy for repositioning.

If the upper or lower lateral cartilages are lacerated or torn, it is necessary that they be properly replaced and fixed in that position.

Management of Septal Injuries

Alteration of the nasal septum from the midline is a common sequela of nasal trauma. Septal injuries have been classified chronologically as: prenatal, birth, preadolescent and postadolescent injuries. This chronologic classification is important because of the new concept of treatment.

Prenatal septal injuries with involvement of the bony pyramid should be observed for at least 3 months before attempts at correction are undertaken. *Septal injuries* sustained at *birth* are usually only cartilaginous displacements. Either manual or instrumental manipulation of the cartilage back to the midline is usually sufficient and effective therapy (Fig. 1).

Formerly, *preadolescent injuries* to the nasal septum presented a serious problem. If immediate replacement and packing in the midline failed to correct the deformity and latent deflection occurred, the deformity was not amenable to submucous resection until the nose had developed fully. Most authorities agree that the nose is not completely developed until the age of 18 years.

Because in the classical procedures of Metzenbaum,[12] Killian[13] or Freer[14] for correction of the curved septum the growth centers, supposedly located at the junction of the quadrilateral cartilage, the perpendicular plate of the ethmoid and the vomer are removed, this type of resection was contraindicated in children. Various surgeons have devised cross hatching operations and similar surgical procedures in an effort to restore physiologic respiration in these children. Otherwise, deviated septa were left alone until the child was "old enough."

In young people with pronounced septal deviations, which allow luxation of the cartilage from the maxillary spine and blockage of nasal breathing, there occur facial changes. For many years adenoid facies has been apparent to pediatricians, laryngologists and family physicians. However, septal facies did not become recognized for a long time. Its importance deserves emphasis.

Salinger[15] pointed out that injuries to the nose in children are different from those in adults because of the difference in structure. The nasal bones, the vomer and the perpendicular plate of the ethmoid are not completely ossified until puberty. Since the nasal frame work of the child is largely cartilaginous, or only partly ossified, trauma inflicted on it results in either incomplete fracture, analogous to the greenstick fracture of long bones, or in bending of the nasal cartilages.

Salinger emphasized the importance of extreme care in the management of nasal injuries in children. Dislocated septal cartilage should be replaced, hematomas evacuated and spreading of the nasal bones prevented by proper application of an external molded splint. Salinger used Metzenbaum's[16] technic for repair of inadequately treated childhood injuries. Others have advocated cross hatching of the quadrilateral cartilage or even removal of a small piece of it in order to restore nasal respiration by repositioning the septum in the midline. As far as I have been able to determine, no one has reported removal of bone and cartilage, as in classical submucous resection, in children before the nose has fully developed.

Metzenbaum[17] stated that when a perpendicular is dropped from the apex of an isosceles triangle to its base, the original triangle is divided into two similar or two symmetrical triangles. If the base of this perpendicular is moved to either side, then these two similar triangles become dissimilar or asymmetrical. The base of the nose viewed from below is an isosceles triangle and the septum, forming a perpendicular to the base line, divides the triangular base of the nose into two symmetrical or similar nares. This is known as Metzenbaum's sign.

Periodic observation of a nasal injury in a previously normal nose of an adult, a child or even the newborn shows definite asymmetry of the nares. This altered condition may be interpreted as a positive diagnostic sign establishing the anatomic displacement of the lower end of the cartilaginous nasal septum from the floor of the nose, with or without other anatomic displacements of the bones and cartilages of the framework of the nose.

Other anatomic displacements of the nasal framework which usually do result from caudal dislocation of the cartilaginous nasal septum are:

(1) The normally perpendicular columella assumes an oblique position.

(2) The nasal tip is lowered, owing to partial removal of septal support to the lower lateral cartilages and to its supporting position back of the columella.

(3) In the opposite nostril there is a sharp "angle of deflection" resulting in partial or nearly complete obstruction to this nostril.

(4) The lower cartilaginous half of the nose forms a false nasal hump with the lower end of the nasal bones.

Photographs of the base of the nose will clearly demonstrate the asymmetry (Fig. 2). A line is drawn on the photograph directly through the perpendicular of the columella and a base line is drawn from the nasolabial angle of one side through the nasolabial angle of the opposite side. From each nasolabial angle a line is drawn up to the perpendicular touching the alar border. In a normal nose these lines converge on the perpendicular but in asymmetrical noses the apex of the triangle will be offset to either side of the perpendicular line, depending on the amount of deviation.

Roentgenography in young children is al-

FIG. 2

A B

(A) Old nasal fracture with septal deviation. (B) Caudal deviation of septum blocking right nares. Metzenbaum lines shown.

FIG. 3

A B C

(A) Crooked nose. (B) Arched palate. (C) Microgenia.

most valueless, especially if only the cartilaginous septum is involved. Physical examination may fail to reveal lesser injuries if swelling of the soft parts develops soon after injury. Therefore, Metzenbaum's sign assumes greater import as a diagnostic aid.

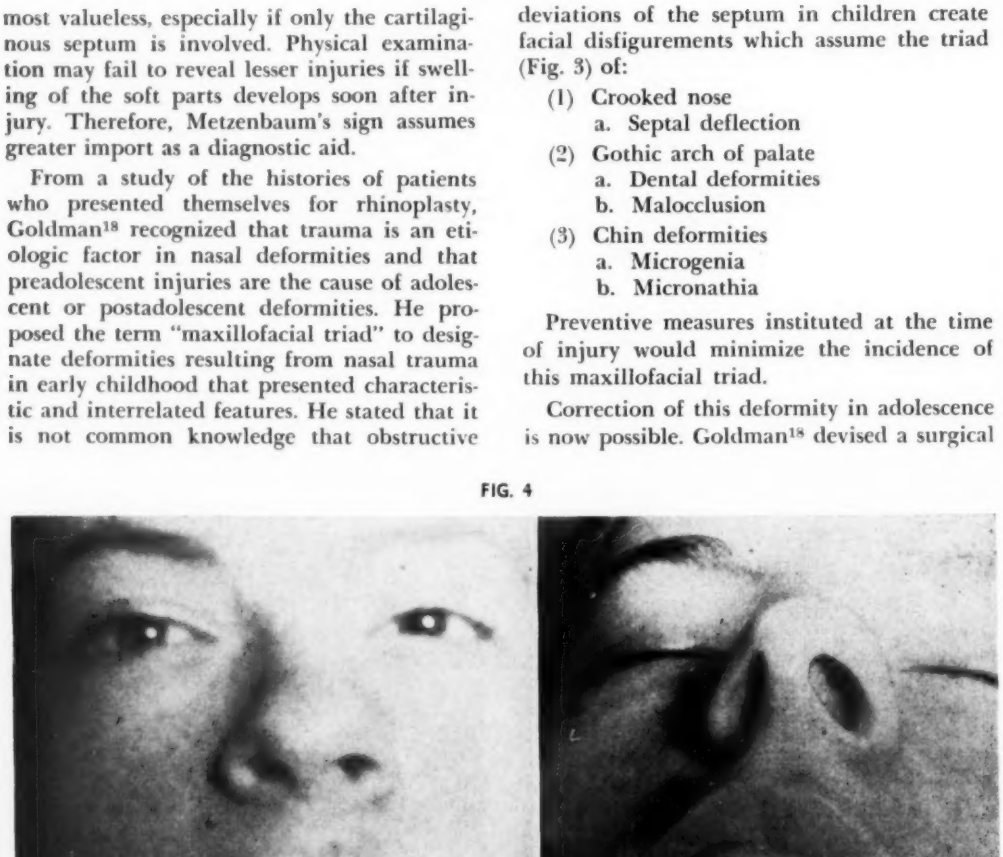
From a study of the histories of patients who presented themselves for rhinoplasty, Goldman[18] recognized that trauma is an etiologic factor in nasal deformities and that preadolescent injuries are the cause of adolescent or postadolescent deformities. He proposed the term "maxillofacial triad" to designate deformities resulting from nasal trauma in early childhood that presented characteristic and interrelated features. He stated that it is not common knowledge that obstructive deviations of the septum in children create facial disfigurements which assume the triad (Fig. 3) of:

(1) Crooked nose
   a. Septal deflection
(2) Gothic arch of palate
   a. Dental deformities
   b. Malocclusion
(3) Chin deformities
   a. Microgenia
   b. Micronathia

Preventive measures instituted at the time of injury would minimize the incidence of this maxillofacial triad.

Correction of this deformity in adolescence is now possible. Goldman[18] devised a surgical

FIG. 4



A B

(A) Crooked nose, twisted columella. (B) Caudal deviation of septum.

procedure, called septoplasty, which makes possible correction of septal deformities in childhood. The operation involves a combination of rhinoplastic and septal surgical procedures. The nose is transfixed as in classic rhinoplasty. The septum is then approached from the anterior or caudal border, and the mucoperichondrium, mucoperiosteum and mucous membrane are carefully dissected. The septum is then segmented into two compartments, which are created by the reversed "L" incisions in the quadrilateral cartilage, thus breaking the spring in this cartilage. Any bony or cartilaginous deviation in the second compartment is replaced in the midline by use of a special instrument, the Goldman displacer. Thus, the entire septum can be replaced in the midline without removal of any tissue. The septum is then sandwiched by mattress catgut sutures, and septocolumella sutures reattach the septum to the columella. Following intranasal packing, rhinoplastic external dressings are applied.

Because this procedure does not interfere with the growth centers of the nose, since no tissue has been removed, it can be performed at any age (Fig. 4). It is therefore an outstanding addition to the armamentarium of the nasal surgeon. Preadolescents with nasal deformities that were not corrected at the time of injury can now be operated upon properly with prevention of sequelae such as the maxillofacial triad and the psychologic effects of a crooked nose. Nasal physiologic function can be properly restored and septal facies prevented. There is no interference with septal support to the dorsum of the nose (Fig. 5).

For correction of malocclusion the services of an orthodontic surgeon are enlisted.

Microgenia is corrected by plastic surgery on the chin.

Integument

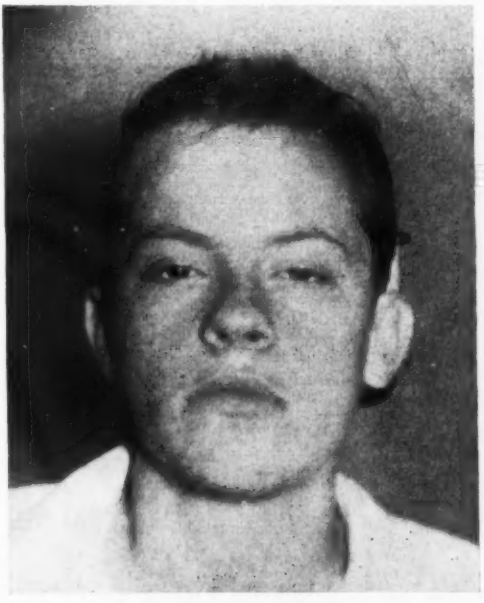
For the sake of completeness, contusions and lacerations of the integument of the nose must be mentioned. Contusions are treated simply by adhesive tape dressings and cold applications. Some[19] use injections of hyaluronidase to diminish ecchymosis and swelling. Lacerations, especially curved or "U" shaped ones, should receive careful attention. Correction of cutaneous lacerations is of great cosmetic importance since subcutaneous defects may be hidden from view but scars remain to offer a constant worry to the patient. It is important to inspect every wound carefully for foreign material.

Because the longer it takes for a wound to heal the more it contracts, healing by first intention is important. Semicircular wounds cause elevations and, if possible, should be converted into linear wounds.

Newmann[20] suggested that no matter how clean the wound appears, wet dressings of 1% solution of acetic acid should be used. In this strength acetic acid has a pH of 4.5, in which bacteria do not multiply and leukocytes are inactivated. Experiments done by Newmann at Bellevue Hospital in New York City showed that identical pieces of skin immersed in pus in test tubes lose weight overnight. Addition of a 1% solution of acetic acid prevents this loss by changing the pH. Dressings of acetic acid are important in abrasions to prevent infection, which, being a metabolic process, causes deepening of the abrasion into ulceration and delayed healing with greater cicatrization. This treatment is also applicable to burns, which are abrasions caused by heat.

If foreign material[21,22] has caused tatooing

FIG. 5



Nasal deformity corrected by septoplasty.

of the skin, dermabrasion with the motor driven wire brush or wheel will easily and completely denude the tatooed epidermis. This is a simple effective procedure that can be performed after topical application of ethyl chloride, or freon, with a spray bottle.

Conclusions

1. The otolaryngologist is the logical specialist to diagnose and treat nasal injuries because he is especially trained in the anatomy, physiology and surgery of this structure.

2. It is important to correct septal deformities in childhood because of the development of neuroses which leave a permanent mark on the patient's personality and also because the maxillofacial triad is a possible sequela of neglected deformities.

3. Until the recent development of septoplasty, it was not possible to correct septal deformities properly until the child was fully grown because older procedures involved removal of growth centers.

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Discussion (Abstract)

Dr. H. Ashton Thomas, New Orleans, La. I agree most wholeheartedly with the author that nasal injuries should belong in the hands of the otorhinolaryngologist. One should be able to reveal, reconstruct and repair.

Where a patient's life is at stake, care of the nose should be put aside until improved conditions warrant nasal care. The human, being the only species to have a projecting nose, is very subject to injury.

Drs. Cottle and Kirchner have shown that nasal deformities of the newborn may correct themselves if left alone. Where definite signs of malfunction are noted and are persistent, correction should be attempted. Obstetricians and pediatricians are urged to inspect and palpate noses of the newborns. When deformities are noted the simplest manipulation may suffice in restoring normalcy.

An injury may accentuate or inhibit growth of whole or any part of the nose. Diagnosis is sometimes difficult until anesthetized on operating table. Injuries may involve skin and subcutaneous tissues, bony vault, cartilaginous vault, septum and lobule or any combination thereof.

Tip and lobule are rare in children. The nose being mostly a cartilaginous organ, most injuries in children involve the cartilaginous vault and septum. Being chiefly cartilaginous is misleading since x-ray examinations will be reported negative, and so give a false sense of security to unwary physician and unknowing patient.

Simple contusions require nothing more than taping and cooling compresses. Where there is severe soft tissue reaction use of hyaluronidase 150 mg. per ounce injected into the tissue will soften this temporarily aiding materially in diagnosis. Nonsevere injuries present a diagnostic problem and should be seen more than once.

Hematomas of the septum should be drained. Devitalized cartilage should be replaced. (Through septal incisions or convenient lacerations the septum may be corrected. Via the same incisions or lacerations access is had to the dorsum as well.)

Besides hematomas of septum, after cleaning nose and nasal cavity one should look for: (1) hematomas of the cul-de-sac and dorsum; (2) laceration of mucous membrane, particularly along pyriform area or of septum; (3) fracture or dislocation of septum; (4) depression of cartilaginous vault from nasal bones, especially if the x-ray film indicates that the tip of nasal bones are fractured but in good alignment; and (5) fracture of nasal bones and nasal process of maxilla.

The attachment of the upper lateral cartilages to the nasal bones is a most important one and knowledge of the anatomy of this area is essential.

1. The nasal bones are external to the cartilaginous vault.

2. The cartilaginous vault extends well under and can support.

3. Cartilaginous vault and septum are continuous.

4. Attachment of cartilage to under side of bone is weak and easily stripped off.

A complete set-up in the operating room is necessary, and a knowledge of, and an ability to be able to take care of the various sequelae is also vital. Those most frequently encountered are septal deviations, saddling or sagging of dorsum, shortening of columella, retraction of columella, rounding of nostrils, flattening of tip, widening of base, bowing or ballooning of upper lateral cartilages and linea nasalis.

Before closing I might stress the importance of photography in these cases as being quite essential in compiling good case records.

I enjoyed Dr. Heinberg's presentation considerably, I feel privileged to have had a part in the discussion, and wish to congratulate him for his efforts.

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Further Experience with Chronic Regional Enteritis in Cuba*

LAUREANO FALLA-ALVAREZ, M.D., and RENÉ ALBACETE, M.D.,†
Havana, Cuba

The authors review their cases of several types of regional enteritis.

TWENTY-FIVE YEARS AGO, Crohn, Ginzburg and Oppenheimer[1] reported, before the American Gastroenterological Association, the original description of regional ileitis as a clinical and pathologic entity. Two years later, Brown, Bargen and Weber[2] suggested the name of regional enteritis to include a group of cases on which some or all of the ileum or jejunum was involved by the nonspecific granulomatous process.

Later, in 1950, Comfort and associates[3] reported the involvement of the duodenum and stomach. Beside these types of granulomatous lesions included in the group of regional enteritis, there existed in others, an extension toward the colon, or the dual association of regional enteritis with ulcerative colitis which have brought a certain amount of confusion. This has not been clarified by pathologists,—we refer to so-called ileocolitis.

Since 1934, when one of us observed the first case on Dr. Bockus' service at the Graduate Hospital of Philadelphia, we have been alert to the recognition of this disease, but failed to detect it in Cuba with the frequency suggested by the American reports of Crohn,[4] Clark and Dixon[5] and Shapiro.[6] In fact, we had had so little experience with this entity by 1947, that in 17,222 patients seen both in our private office and in the hospital in 16 years of practice, we had been able to find only 3 instances of the disease, whereas we had encountered during this period of time 68 cases of ulcerative colitis.

This limited number of cases in contrast to statistics from foreign countries led us in an attempt to learn the true incidence of regional enteritis in Cuba, by making a survey of its occurrence in the practices of our most outstanding clinicians and surgeons. These results were reported to the American Gastroenterological Association in 1950.[7]

From then until June 1957 we have been able to observe 20 cases of regional enteritis, and the purpose of this communication is to add 7 more years of experience with this disease to our former report. Our review includes all the cases seen both in our private practice and at our service at the University Hospital "General Calixto García" in Havana. During the same period of time, the cases of ulcerative colitis came to 102, an incidence of 1:5.3, lower than that reported by Crohn,[4] in 1939, of one case of regional enteritis to 2 of ulcerative colitis. The higher incidence reported by Crohn and others who have had special interest in this disease, may be due to the fact they received a much wider selection of such cases.

Clinical Study

The clinical picture of the 20 cases studied has been in accord with that reported by other authors, Crohn[8] and Bockus.[9] The common symptoms and signs observed in our cases are summarized in tables 1 and 2.

It must be emphasized that not a single case was observed in the negro race, though

TABLE 1

CASES STUDIED: 20

Sex	
Female	12
Male	8
Age	
Mean	35 yrs.
Youngest	16 yrs.
Oldest	71 yrs.

*Read before the Section on Gastroenterology, Southern Medical Association, Fifty-First Annual Meeting, Miami Beach, Fla., November 11-14, 1957.

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TABLE 2

SYMPTOMS AND SIGNS

Abdominal pain	20 (100%)
Diarrhea	14 (70%)
Constipation	5 (25%)
Diarrhea alternating with constipation	1
Loss of weight:	
30 pounds	5
15 pounds	9
Fever	13 (65%)
Palpable tumor	9 (45%)
Pain and muscle guarding	7
Acute intestinal obstruction	1
Gross bowel hemorrhage	1

2 were in mulattoes. The rarity of regional enteritis in Negroes has been described by others.

The duration of the disease in 2 cases was 24 and 30 years before diagnosis was established. In both the disease had had a mild course, with periodic short bouts of acute exacerbation during this time; the 2 patients were active throughout these years. The mild chronic course extending over years has been well described by Crohn.[10]

Eleven patients (55%) had had an appendectomy, and of these in 8 it can be assumed the symptoms of regional enteritis were already present or coincident with the beginning of the clinical symptoms of the disease. In these cases the appendectomy was not associated with abdominal fistula. Gross hemorrhage from the bowel was observed in one case, in which thorough examination revealed no other disease that could explain the hemorrhage.

Acute intestinal obstruction, in which a correct diagnosis could not be made before operation, was observed in one case. Infantilism was observed in one. We have observed no cases in which fever was the outstanding symptom as has been reported by others.

Pathology

In all cases, except 3 treated medically, the diagnosis was confirmed by the pathologic study of the resected bowel. The pathologic diagnosis was based on Warren and Sommers'[11] criteria for regional enteritis.

Based on the site of involvement we have classified our cases in the following manner:

Jejunum Only	
Jejunitis	0
Ileum Only	
Terminal	9 cases
Regional (not terminal)	1 case
Segmental (skipáreas)	5 cases
Jejunum Ileum	
Diffuse jejuno-ileitis	1 case
Ileum Colon	
Terminal ileum and cecum	3 cases
Terminal ileum and rectum	1 case

Fistulas

As has been described by many authors, fistulas and abscess formations are quite common in regional enteritis. In the 20 cases presented here, there were 6 cases of internal fistulas between small intestinal loops, ileum and urinary bladder, ileum and cecum, and ileum and rectosigmoid.

We believe in some of the cases of ileocolitis, not treated surgically, the inflammatory extension into the colon may be caused by direct fistulous tracts from the diseased terminal ileum. This agrees with Otani's[12] opinion. In 2 of the cases of terminal ileitis, with invasion of the cecum in one and rectum in another, there was a fistula between the ileum and cecum, and ileum and rectum.

It is our opinion that some internal fistulas escape recognition if the resected specimen is not thoroughly examined grossly and histologically by the pathologist, who must be informed by the gastroenterologist or surgeon of the peculiarities to be looked for in the specimen.

External Fistula. No fistula to the abdominal wall was present in the cases studied. In 6 there were anorectal fistulas that were successfully treated surgically after resection of the diseased small bowel.

Medical Treatment

Our experience in the medical management of regional enteritis is limited to only 3 cases in which we followed the criteria set by Kiefer and associates[13] for medical treatment: (1) localized disease of short duration and without complications, such as obstruction, fistula or abscess; and (2) uncomplicated but widespread disease involving so much small intestine that extirpation of all of the affected portion would seriously impair absorption.

Two cases belong to the first group and one to the second. The first 2 cases had terminal ileitis for not longer than one and a half years with a mild and intermittent course. Both patients have remained well over a

period of from two to three years, with no progression of the disease demonstrated by periodic roentgenologic examinations.

The course of the third case has not been so favorable because of poor nutritional condition with no definitive clinical or roentgenologic improvement.

It is our opinion that one should insist on the medical management of regional enteritis only if the course of the disease is mild, favorable and the patient can live comfortably with his enteritis. We have found no specific therapy and all available measures are strictly supportive. Medical management should be directed to the maintenance of nutrition and correction of its deficiencies; control of pain should be obtained by reduction of the intestinal activity and control of infection. Much care and attention must be given to the psychic condition by adequate support by a superficial psychotherapy.

We emphasize a specially prolonged physical and mental rest, but these valuable measures depend entirely on the economic status of the patient.

For the medical management of recurrent enteritis we continue the same objective as for the initial disease.

Surgical Treatment

Of the 17 cases treated surgically, resection was done in 14 and short-circuiting without transection in 3 cases. The type of operation performed is summarized in table 3.

A patient was sent to us in whom a large resection was done in another hospital for diffuse ileojejunitis in skipárea. Only 3 feet of jejunum had been left. After resection this patient was in a critical condition, with considerable loss of weight, steatorrhea, and physically appeared 20 years older (precocious senility) than the actual age. This patient was treated with a diet rich in carbohydrates and proteins, and low in fats; calcium chloride and pancreatic extract was given orally and vitamin A, D and K parenterally. With this treatment the diarrhea was reduced to 2 or 3 mushy bowel movements daily, and there was a weight gain of 10 pounds. Four years after resection the patient was able to do her housework, although being 20 pounds underweight.

TABLE 3

SURGICAL TREATMENT

Ileocolonic resection and ileotransverse colostomy	9
Ileotransverse colostomy with exclusion	3
Partial resection of ileum and ileotransverse colostomy	1
Partial resection of ileum and end-to-end anastomosis	2
Ileocolonic resection and ileostomy	1
Massive resection of jejunum and ileum	1

We believe, as do others, that in diffuse ileojejunitis such massive resections should be avoided because of the difficulty to maintain nutrition, as well as the possibility of future recurrence.

There were no operative mortality in the 14 cases treated by resection, and in 3 with short-circuiting operations without transection. Of the 14 patients having resection, there were 5 recurrences (35.7%) and in the 3 with exclusion there was one recurrence. Because of the small number of cases presented we believe it is difficult for us to decide which surgical procedure is the best. We are more in favor of resection in view of the low mortality, and because it gives an opportunity to study the resected bowel and exclude other diseases such as tuberculosis, lymphoma and others. We agree with Kiefer[14] in his statement that the surgeon should resect well beyond the last trace of the disease, with the assurance that there is less danger in the loss of intestine than there is in the incomplete removal of the disease. In some of the specimens resected in our cases, the pathologist has reported small intestinal foci of granulomatous inflammation at some distance from the diseased area. This would have escaped recognition by the surgeon by inspection and palpation.

Recurrence

Of the 20 patients there were 6 who had recurrence, an incidence of 30 per cent. The recurrent lesion was confirmed radiologically from 2 to 6 years after resection or an exclusion operation. The site of involvement of recurrence was ileum proximal to the anastomosis in 3 cases, proximal ileum and at the site of the anastomosis in one case, ileum proximal to the anastomosis and rectum in one case, and ileum proximal to the anastomosis and entire colon in one case.

As may be appreciated, in all cases the lesion was localized in the ileum proximal to the anastomosis, but in 2 cases there was also

a colonic lesion distal to the anastomosis. In this group of cases the frequency of this latter distal localization is much greater than reported by Van Patter and associates[15] at the Mayo Clinic or by others.

Of the 6 patients with recurrence, 2 have been treated medically for 3 and 4 years with fairly good results. The other 4 patients were submitted to resection, and in 2 of these a total colectomy and ileostomy was performed.

Medical treatment should always be tried in recurrent regional enteritis, its recognition by radiologic examination does not always mean another resection.

The oldest patients studied were 62 and 71 years of age and neither had a recurrence. This has been the experience of Van Patter and his collaborators,[15] and of others who have found a low incidence of recurrence among those who were more than 51 years of age at the time of onset of symptoms of regional enteritis.

Ileocolitis

Regional enteritis and chronic nonspecific ulcerative colitis are two diseases that look alike because they are inflammatory diseases of unknown etiology localized in the intestine. In most cases the lesion is so different and its location in the small intestine in the former and in the colon in the latter, make us consider them, in our present knowledge, as two different entities.

Ileocolitis is a term that has been applied loosely to all nonspecific inflammatory lesions involving the ileum and large or short segments of the colon. There is at present much confusion in the terminology and pathologic interpretation of such lesions. There is a well-established criterion for regional enteritis in its location in the terminal ileum or in the more proximal segments of the small intestine as well as for chronic nonspecific ulcerative colitis with involvement of the rectum and short or longer segments of the colon. However, there is disagreement or lack of definite criteria in the following two types of ileocolitis.

Type 1. This is regional enteritis involving the small intestine as well as short or long segments of the colon, either as a continuous process or with segments of normal colon between the ileal and colonic diseased segments. Yarnis[16] considers that in most cases the colonic process is ulcerative colitis, and rarely is granulomatous colitis of the regional enteritis type, naming it combined ileocolitis. On the other hand Warren and Sommers[17] have a quite different point of view and have stated that the association of regional enteritis and ulcerative colitis in the same patient is quite rare and is only seen in an incidence of one per cent. They have found that in 15% of the cases of regional enteritis studied by them, the disease extended to the colon and so named it cicatrizing enterocolitis.

We have studied 6 cases of this type of ileocolitis, which we have divided in two groups. Those in which there had been invasion of the colon initially and no surgical treatment had been used, and those in which the colon became involved following operation, as a recurrence. There were 4 cases in the former group, in which a short segment of the colon was involved,—cecum in 3 cases and the rectum in one. In the 3 cases with involvement of the cecum, a hemicolectomy and resection

FIG. 1

Barium meal study showing recurrent regional enteritis in terminal ileum and ulcerative colitis of entire colon. (Resected colon is shown in Figs. 2 and 3.)

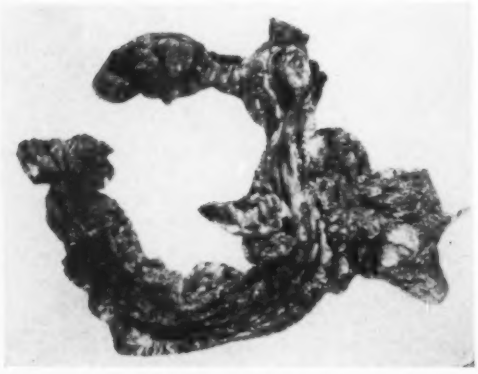
of the diseased ileum was done and the pathologist reported regional enteritis with granulomatous invasion of the cecum. In the case in which the rectum was involved, the proctosigmoidoscopic study demonstrated the rectal signs described by Van Patter and associates[15] in regional enteritis. A fistula was found between the diseased ileum and rectum.

In 2 cases there was invasion of the colon as a recurrence following operation. In both a resection of the ileum and total colectomy were performed. In one, only the rectum was involved by a granulomatous inflammation that produced a marked thickening, stenosis and fistulas of the rectum. In the other, the whole colon was thickened and increased in consistency, with a diffusely marked reduction of the lumen of the large intestine (Figs. 1 and 2). Grossly, it resembled a diffuse regional enteritis type of invasion of the colon, yet histologically it was characterized by a superficial inflammation limited to the mucosa without a granulomatous process. The pathologic report was ulcerative colitis.

We can summarize our experience in these cases of the type 1 ileocolitis as follows: In those with involvement of a short segment of the colon the gross and histologic lesion was granulomatous and hyperplastic in type. In the case with the diffuse involvement of the colon a special type of hyperplastic ulcerative colitis was encountered, one that we had never seen before.

From what has been reviewed in the literature and the experience obtained from our limited number of cases, we are inclined to believe that the colonic lesion secondary to, or associated with regional enteritis may be variable. Probably this depends on the presence of direct fistulous tracts and the reaction of the tissues of the colonic wall to the unknown agent of the disease. The colonic lesion in some cases is of granulomatous regional enteritis type, in others, more or less typically ulcerative, while others probably represent mixed forms, as have been described by Yarnis, Marshak and Crohn.[18]

FIG. 2



Total colectomy. Diffuse narrowing of the lumen of the large intestine. Thickening of the colonic wall.

FIG. 3

Ileotransverse colostomy.

Type 2. Ulcerative colitis invading a long or short segment of the colon, but sparing the rectum and rectosigmoid, has been given different names. Bargen and Weber[19] called it "regional migratory ulcerative colitis," Crohn, Garlock and Yarnis,[20] "right-sided regional colitis," and Castro-Barbosa, Bargen and Dixon,[21] "regional segmental colitis." This variety of ulcerative colitis has been recently studied pathologically by Neuman and Dockerty.[22] They reported 25 resected specimens of segmental colitis in which there was a nonspecific subacute and chronic granulomatous inflammatory process involving the entire thickness of the colonic wall. These findings are in disagreement with Warren and Sommers'[11] pathologic criteria for chronic ulcerative colitis as an exudative and reparative process limited to the mucosa and submucosa and not granulomatous in nature.

If Neuman and Dockerty's findings hold true for all cases of regional segmental colitis, as has been our experience in two cases with resection, we believe these pathologic

differences from the classical nonspecific ulcerative colitis should be reviewed.

In all our cases of ileocolitis, tuberculosis has been excluded by x-ray study of the lungs, inoculation of guinea pigs in most cases, and a negative search for caseating giant cell tubercles as well as a negative search for tubercle bacilli in the tissues examined. According to Crohn, Garlock and Yarnis,[20] approximately 40% of the cases of regional segmental colitis show involvement of the terminal ileum as a "backwash" process. This is what we refer to as type 2 ileocolitis, a type of ileocolitis which may also be seen in nonspecific ulcerative colitis in approximately 24% of cases.

Type 1 and 2, ileocolitis can be easily differentiated in most instances, because in type 1 the ileal lesion in the more pronounced, at least initially, and presents the typical radiologic characteristics, complications and pathologic findings described in regional enteritis. In type 2 the colonic lesion is more marked in degree and extension, and the ileal lesion is a late, minimal and shorter lesion not showing the marked tendency to fibrosis and thickening characteristic of regional enteritis.

Conclusions

1. Our experience with ulcerative colitis and regional enteritis in Cuba makes us believe that regional enteritis is not a frequent disease. The incidence of regional enteritis compared with ulcerative colitis is in the ratio 1 to 5.

2. The clinical picture and radiologic and pathologic aspects is in accordance with what has been described by other authors.

3. Ileocolitis is a debatable and puzzling problem which requires a further study.

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The Development of a Successful Technic for Cataract Extraction*

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The author stresses the need for constant observation and for innovations as new developments take place.

EVERY OPHTHALMIC SURGEON who does cataract surgery, whether it be twenty per year or two hundred per year, has his own individual variations of one of the standard technics of cataract extraction. A statement made by Kirby[1] describes this very well: "It should be the aim of all cataract surgeons to develop their own system of cataract surgery by which they can apply in sequence a progressive series of maneuvers according to indications so that they will not impose upon the eye the difficulties which develop with the use of a routine method of operation in every case."

Most cataract surgeons in the country, and this includes the author, are classified as "occasional operators." Those of us who do 30 to 50 cataract operations each year are unable to carry out and evaluate every new development or modification of the steps in cataract extraction, and therefore it is necessary for us to borrow from the experience of those of our colleagues who do hundreds of operations in the larger eye clinics. We must apply those newer developments which offer reasonable expectation of improving our own technic and either accept or reject each as we observe our results. As long as our results are short of perfect in every case, we must strive for improvement. This paper is to show how this search for a completely successful technic for cataract extraction has progressed and is progressing for one "occasional operator," and how various complications have been reduced by the adoption of important ideas proposed by more experienced surgeons.

Concerning pre- and postoperative medication, I have ordered a broad spectrum antibiotic ointment to be instilled into the eye to be operated upon the night before operation and again on the day of operation. Before the introduction of Chloromycetin ophthalmic ointment, I had one instance of postoperative endophthalmitis which occurred in an eye with severe asteroid hyalitis. The eye was not lost, but vision was reduced to perception of light only. In the 170 cases since the routine use of Chloromycetin ointment, there has not been a postoperative infection.

Systemic medications include 25 mg. of Phenergan given 4 hours before operation, Nembutal 0.1 Gm. given 2 hours before operation, 10 mg. of Compazine given one and a half hours before operation and 100 mg. of Demerol given one hour before operation. Occasionally the dosage of Nembutal and Demerol are reduced for the very elderly patients. Nausea from Demerol has been almost completely eliminated in the past few years by first Dramamine, then Thorazine and now Compazine. I have had only one patient become psychotic from the Nembutal, and without harm to his eye. He was later found to have a chronic liver disorder. His second eye was operated upon a year later without the adjunct of a barbiturate and there were no complications. After operation aspirin and Demerol (50 mg.) are given for pain, Compazine is continued to combat nausea, and chloral hydrate (gr. 7½ to 15) is given for nightly sedation.

The pupil is dilated preoperatively with 10% phenylephrine and 4 or 5% homatropine ophthalmic solution, administered 4 times at 15 minute intervals beginning one and a quarter hours before operation.

The psychologic preparation of the patient before operation is very important, and is usually more adequately managed by the "occasional operator" than it is by the chief of the large eye clinic.

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For anesthesia I use 0.5% tetracaine topically and 4% Novocaine retrobulbarly. This concentration has been recommended by Goar,[2] and allows one to obtain excellent anesthesia with a small volume (0.75 cc.). Hyaluronidase, 150 units, is added to 30 cc. of Novocaine for the diffusion effect. Retrobulbar hemorrhage was encountered 3 times in 180 operations (1.7%), but each of these 3 eyes was successfully operated upon 1 or 2 weeks later. On one occasion the Novocaine prepared by the hospital was inert, or nearly so, and the patient had pain during the iridotomy and was able to squeeze her eye just enough to spontaneously deliver her own lens, intracapsularly. This led to one of the cases of postoperative complication of hyphema and incarceration of the iris with a final visual acuity of 20/50.

Akinesia is obtained by zygomatic injection as recommended by Atkinson.[3] This has given me better results than the Van Lint or the O'Brien injection, and I have therefore replaced them with it. My experience with pentothal anesthesia for cataract surgery is limited to one case. There was no complication, but I still plan to use it only when there is real contraindication to local anesthesia.

Following the retrobulbar injection, pressure is maintained on the globe with the hand over a wad of gauze on the closed lids for 3 to 5 minutes. The value of this maneuver in lowering the intraocular pressure has been pointed out and measured by Kirsch and Steinman.[4] Since I have been employing this technic I have had no loss of vitreous (100 cases). Prior to that (80 cases) there was some loss of vitreous in 3 patients or 3.8 per cent. Fortunately the loss was small and two eyes obtained 20/30 vision and the other 20/20. The general average of vitreous loss is listed as 6%, of 1,068 cases by Irvine,[5] and 9% of 749 cases by Cinotti and Jacobson,[6] also 6.5% of 565 cases by Townes.[7] The value of digital pressure in the prevention of vitreous loss is very significant in my experience. There is some argument that the very low intraocular pressure makes the intracapsular extraction more difficult, and I must admit that my most frequent complication is rupture of the lens capsule, if this may be called a complication. My incidence has been rupture in 7.5% of cases before global pressure and 11% since. Only one patient in each group required a later splitting of the retained capsule. Usually the broken capsule was removed entirely with no disturbance of the vitreous. Recently I have been using the erisiphake more frequently and hope to break fewer capsules in the future.

The location and method of making the corneal section, and the type of suturing and suture material has varied considerably for me and only a few conclusions can be made about the relative merits of each.

With a limbal based conjunctival flap (56 cases) hyphemia occurred in 4 or 7 per cent. With corneal section (124 cases) hyphemia also occurred in 4 or 3.2 per cent. The blood cleared without complication in all cases. The general incidence of hyphemia is listed by Bartlett[8] as 13.9%, of 115 cases with flap, and 7.6% of 105 cases without flap. Cinotti and Jacobson[6] found hyphemia in 4.6% of 794 cases (some with flap and some without). Townes[7] had 2.5% hyphemia in 565 cases.

With a flap (56 cases) there were 4 instances of subconjunctival prolapse of the iris (7%) requiring no treatment but resulting in rather high astigmatism. Bick[9] found prolapse of the iris in 2% and incarceration in 4% of 163 cases. Bartlett[8] had no prolapse of the iris in 115 cases with a flap.

With a corneal section and 3 sutures there were 8 cases of adherence of the iris to the corneal wound in 98 operations (8%) and 2 cases of prolapse of the iris requiring surgical intervention (2%). Recently I have been using 5 appositional corneal sutures and in 26 cases there has been one adherence and that was due to a surgical accident due to inert Novocaine. Bartlett[8] reported 6.6% prolapse of the iris after corneal section (105 cases) in registering his plea for use of a flap. The placing of 5 sutures in the cornea requires very little more time, and with the new micropoint needles is a rather simple matter. The added strength to the wound is a great advantage and the patients seem to experience no more discomfort with 5 sutures than with three.

I cannot compare the Graefe knife and Keratome sections because I have never done a knife section. I used to make a scratch incision one half the depth of the cornea, insert a suture through the lips of the groove and pull up the loop. The chamber was then entered with the keratome and enlarged with

the right and left handed corneal scissors. Recently I have found it just as easy to complete the entry into the chamber with the Bard-Parker knife blade, after the suture, and then to enlarge it with right and left handed scissors. This results in a smooth fitting wound and should minimize the danger of epithelial downgrowth. Fortunately, in the present 180 cases there has been no instance of this complication as yet.

A peripheral iridotomy is made at 12 o'clock. The lens capsule is grasped with capsule forceps or the erisiphake and the zonule is broken by point external pressure at 6 o'clock. The lens is delivered with pull and counter push. The anterior chamber is not irrigated. The corneal incision is then closed with the original preplaced suture of 6-0 silk or 6-0 mild chromic catgut and two post-placed appositional sutures are taken on each side, making a total of five. One drop of 0.5% eserine and a bit of Chloromycetin ophthalmic ointment are put in the conjunctival sac and pads applied to both eyes. On the following morning the eye not operated upon is left unbandaged. Adequate pre- and postoperative medication is used to prevent nausea, induce relaxation and allay pain. The patient is allowed out of bed on the third day and allowed to go home on the fifth day.

Delayed restoration of the anterior chamber is a subject of much concern in the ophthalmic literature. Kronfeld[10] reported an incidence of 11% in 749 cases; only one in 14 led to permanent glaucoma. Bick[9] noted a flat anterior chamber in 6% of 163 cases. Bartlett[8] found it in 15% without a flap and 8% with a flap. Townes[7] listed this complication as occurring in 2.7% of 565 cases. In the present report of 180 cases there were 6 cases of shallow anterior chamber (3%) with choroidal detachment. None required special treatment and one had chronic glaucoma postoperatively. This patient, however, developed chronic glaucoma in the second eye without choroidal detachment or clinically shallow anterior chamber. I do not know how to account for my low incidence of shallow anterior chamber, but I am very thankful that this particular complication has been no problem. The sutures are removed on the fourteenth day and the bandage on the fifteenth day. With silk corneal sutures there are always the late complications attendant upon removal of the sutures. In 123 cases I have had 3 instances of aqueous loss as sutures were removed (2.4%). In all 3 cases the anterior chamber had reformed within 24 hours and no harm had resulted. Bick[9] reported 10% complications upon removal of 67 McLean type sutures with 2% requiring surgical correction. He had only 3% complications with 1% requiring surgical correction in 96 cases of his own mattress type suture. For a while I had used catgut sutures leaving the ends long as recommended by Kirby.[11] With the introduction of the micropoint needles on silk thread, I changed to those. Now that catgut sutures are available with the new needles, I am starting again to use catgut. Dunnington and Reagan[12] have demonstrated better wound healing with catgut.

Even after 14 days and the successful removal of sutures, the corneal wound is still a fragile thing. I have had 5 patients rupture their wound during the third week after operation from such accidents as sticking their fingers or eyeglass frame in the eye, or bumping the head against the door or automobile dash. One patient lost all vision from such an accident. She was brave enough to let me operate on her second eye and fortunately had no complication and obtained 20/20 vision. As a result of these injuries I warn my elderly patients to be extremely careful during the week following the removal of the sutures.

Iritis is not a rare complication of the postoperative period. Townes[7] reported it in 5.8% of 565 cases, and Cinotti and Jacobson[6] in 5% of 794 cases. In the present series of 180 operations, there were 4 instances of iritis severe enough to cause a fixed pupil due to posterior synechiae (2.3%). There was no glaucoma and vision was not impaired in any case. During the postoperative period atropine is used in the eye only often enough to insure a mobile pupil and antibiotics are instilled topically to prevent infection. Alterations of the vitreous in aphakic eyes were well described by Irvine[5] and Kirsch and Steinman.[13] The various complications of vitreous herniation or rupture into the anterior chamber include clouding of the cornea, condensation of the vitreous, degeneration of the macula, retinal detachment and pupillary block glaucoma. Clouding of the

cornea was found in 1.5% of 1,068 cases by Irvine.[5] In the present series there were 2 cases of mild persistent corneal clouding due to vitreous contact (1%).

Keratitis or corneal dystrophy is said to be more common with the corneal section (Kirby and associates[11]). Cinotti and Jacobson[6] found it in 0.9% of 749 cases. Townes[7] reported this complication in 2% of 565 operations. In the present series of 123 corneal sections there were 3 cases of severe Fuch's dystrophy and one case of persistent striate keratopathy. I believe the dystrophy was due to the irritation of the corneal endothelium by a solution of acetylcholine that was used to irrigate the anterior chamber and constrict the pupil immediately after extraction of the lens. Two of these 3 patients were operated on in the second eye with the same type of corneal section and both obtained 20/20 vision. I have discontinued irrigating the anterior chamber with any solution, nor do I put an air bubble in the chamber. I believe that the least possible amount of manipulation of the eye is the best.

Retinal detachment occurred in 2 aphakic eyes within one year after operation in this series. The general incidence is given as 1% by Cinotti and Jacobson[6] and as 2% by Townes.[7]

The final visual results in these 180 cases were as follow:

20/30 or better	160 cases	89.0%
20/40-20/60	12 cases	6.6%
20/70-20/200	3 cases	1.6%
Less than 20/200	5 cases	2.8%
	180 cases	100%

In 1,001 cases operated upon at the New York Eye and Ear Infirmary, Cinotti and Jacobson[6] reported visual results as follows:

20/30 or better	44%
20/40-20/70	40%
20/100-20/200	7%
Less than 20/200	9%

In the present series there were 20 eyes in the 180 operations that had less than the desired visual result of 20/30 or better, of these 20 there were 9 who had technically perfect operations, but other ocular disorders, principally pre-existing macular degeneration, limited the final visual acuity. This leaves 11 cases or 6.1% in which some operative or postoperative complication resulted in impaired vision. Some of these complications have been analyzed and the operative technic changed to lessen their incidence. As new variations are reported, we may copy or adapt them and improve our results as we continue our development of a successful technic for cataract extraction. We "occasional operators" express our gratitude to our more experienced colleagues who continue to show us how to avoid many of the surgical pitfalls that beset the cataract surgeon as he develops the various technics which we may borrow in their more completed forms.

Summary

Technics and results of 180 consecutive cases of intracapsular or attempted intracapsular cataract extractions are reported. A description is given of how my technic has changed in recent years to adapt various improvements into the operation. Some changes have been tried and discarded, but others have been found valuable and retained. The technic employed at present is based on the premise that the least manipulation gives the best results provided there is proper emphasis on secure wound closure. The percentage of operative and postoperative complications of all types was 32%, but only 6.1% were responsible for any visual impairment. As the technic has been improved the incidence of complications has gradually lessened.

Eighty-nine per cent of the 180 patients obtained a visual acuity of 20/30 or better in the operated eye. The necessity of continual improvement in operative technic is stressed.

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Discussion (Abstract)

Dr. Marion W. Hester, Lakeland, Fla. The author's title "The Development of a Successful Technic for Cataract Extraction" is an appealing one. This is a very personal matter with every eye surgeon. The development of his technic is only begun by the time of finishing a busy residency. The process of development and change goes on as long as the surgeon continues to remove cataracts.

I have seen cataracts removed without any thought of suturing the eye, and many more with the use of one or two sutures in a conjunctival flap. At the time of my own residency training we usually used a Stallard corneoscleral suture. We thought very highly of this method and I continued use of this suture for several years. The method was abruptly halted in my practice following one very bad result. This was a prolapse of the complete upper one-half of the iris from 9 o'clock to 3 o'clock which occurred several days after operation and a sympathetic ophthalmia developed in the opposite eye.

I am struck with the similarity of the method evolved by Dr. Benton and that which is used in my practice. My technic is to make a 4 or 5 mm. incision with the keratome at the upper limbus, place one corneoscleral suture at 12 o'clock followed by widening of the limbal incision with scissors. The corneal flap is lifted and peripheral iridotomies done at 10 o'clock and at 2 o'clock. The lens capsule is grasped with forceps and the zonule broken by external point pressure at 6 o'clock combined with traction on the lens. The lens is then delivered by tumbling and four or more additional corneoscleral sutures are placed. This is very much what Dr. Benton has described.

As we have progressed, the patient has been allowed more freedom after surgery. It is my practice to cover only one eye following cataract surgery. The patient is allowed out of bed the day after surgery and this has proved to be one of the largest single factors promoting his comfort and well-being. All dressings are left off on the eighth postoperative day. Sutures are removed usually on the fourteenth day and rarely is any difficulty encountered in removing the sutures.

In my opinion the greatest single advance in cataract surgery in the past several years is pressure on the globe to produce a soft eye. With use of this method in my last 150 operations, vitreous has only rarely been seen anterior to the iris. In a previous 450 cases, vitreous loss was several times more frequent.

Like most cataract surgeons, I have experimented with the conjunctival flap. In 130 cases, I have used a limbal based flap with three corneoscleral sutures. This increased the difficulty of operative manipulation considerably and almost doubled the operating time. The incidence of hyphema was definitely increased in the cases having a conjunctival flap, probably because the incision must be scleral. In the presence of these disadvantages and with little to gain over the flapless five suture method, I abandoned the flap.

Looking at cataract surgery at the present time, I am impressed with the changes that have come about even in the past five years. These are due to the many small modifications in methods that have produced better results and much more comfortable and tranquil patients. This difference is due to what Dr. Benton has described, "The Development of a Successful Technic for Cataract Surgery."

Ethmoid Sinusitis in Children*

WILLIAM H. TURNLEY, M.D., *Ocala, Fla.*

Though it is not certain that sinusitis of the ethmoid cells is the almost universal cause of disease of the nasopharyngeal structures, it is, nevertheless, a common cause of disease.

WHEN A MOTHER BRINGS HER CHILD into your office and says, "Doctor, my child has had the sniffles ever since he was born. He has been shot in the arm, dropped in the nose, stuffed with vitamins, until he is actually afraid of his own mother—if I put on a white coat."

You feel like saying, "So, what?" Frankly, I think the first running nose a baby has, at the age of 6 weeks, is his first ethmoid sinusitis, or maybe it started as soon as the umbilical cord was tied. However, from then on he has it, more or less. It is like the common cold, you do not catch it, you keep it, and it flares up when conditions are right. They are somewhat similar if not synonymous. Perhaps there is no infection more common, or universally spread over the earth, than nasal sinusitis. And one might add, there is no disease so poorly recognized as a factor in the etiology of regional and general systemic diseases.

Anatomy

Our knowledge of medicine and surgery has increased so greatly in recent years, that it seems proper to depart from the traditional manner of presenting this subject. Still I would like to refresh your memory on the anatomy of the ethmoid sinuses. They begin to develop about the fourth month of intrauterine life, and at birth they are a definite entity. There is never a congenital absence of the ethmoid cells. They are divided into two groups, separated anteriorly and posteriorly, by a thin transverse bony partition.

The anterior group is associated with the frontal and maxillary sinuses. The posterior group is related to the sphenoid sinus. The ethmoid sinus is multilocular, resembling a honeycomb, with the cells ranging in number up to sixteen. These vary in size and shape, though the anterior ones are smaller than the posterior ones. Each cell is lined with cilliated respiratory epithelium, and secretes mucus through its own ostium into the nasal passage, either directly or through one another. These cells quite often invade all the area around the orbit of the eye,—above, below and behind. This is why eye symptoms are so characteristic of an ethmoid sinus infection. The ethmoid cells also occur in the superior and middle turbinates, and the nasal septum itself. And so the loss of smell (anosmia) is characteristic of involvement in this area.

Various functions have been attributed to the sinuses, none of which is entirely satisfactory, except probably to harbor a cold.

So much for the textbook. From now on I will try to limit this paper to my own clinical observations, treatments and opinions.

Clinical Aspects of Sinusitis

The solution of the problem of chronic sinusitis, with all its manifestations and complications in an adult, may be found in the ethmoid sinus of a child, for I believe the involvement of all other sinuses is secondary to the ethmoid instead of the maxillary sinus, as many papers in the past have stated. It is the insidiousness of infection in this area that makes ethmoid sinusitis so vulnerable, and I think this occult or concealed type is more vicious than the obvious purulent type. Probably that is why many adults have poor vision in one eye, following repeated colds or sniffles as children. The visual apparatus may be involved by direct extension in retrobulbar neuritis, or indirectly as in retinitis or uveitis.

Anyone can diagnose sinusitis in an adult if the nose has been blocked with pus or polypi for months, but the time to start treating it is when, in infancy, the child had

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the sniffles. I firmly believe the ethmoid sinus is the most vulnerable spot in the whole practice of otolaryngology, including the tonsils. Where else could germs hide, and be so near the portal of entry into the eye, the ear, the nose, the throat, and the brain? One need but look at the anatomy of the anterior ethmoid cells, with the intracranial prolongation (crista galli). Also, there is hardly any barrier by the seive-like structure of the cribriform plate. No wonder meningitis used to be so frequent a complication, from an ethmoid sinusitis, before the days of sulfa drugs and antibiotics.

The work being done by Drs. Huebner, Rowe, Ward, Parrott, of the National Microbiological Institute, and others, on viruses of the upper respiratory tract, group infections of the eye, ear, nose and throat, all as one and the same condition.

So when I speak of ethmoid sinusitis, I am not referring to streptococcal or staphylococcal infection alone, but more particularly, to infections by viruses or their mutations. Even now, we are not so sure that a cold and "polio" are very different.

A well-trained otolaryngologist today should be trained also in ophthalmology, and it would be very difficult for an ophthalmologist to treat diseases of the eye without a knowledge of pathology of ethmoid sinusitis and adjacent structures. A neurologist should be trained in both, and it would not hurt a pediatrician to know something of all three.

Now, to get back to the subject of *ethmoid sinusitis in children.* Why do so many children have a running nose? I think it is because the infection in his ethmoid sinus stimulates the columnar cells of the lining mucosa to secrete more mucus to combat the irritant. The swelling blocks the passageway, preventing free circulation of air and drainage of waste products, which is absolutely essential in all infections. All this invites more infection,—in other words, it is a vicious cycle. The mucus and debris cannot drain through the nasopharynx as it should, due to blockage by pharyngeal tonsils (adenoids), or by swelling of the turbinates against the septum, so that the mucus must drain out the front of the nose, where his mother can see it. And any child with a recurrent conjunctivitis is suffering from a flare-up of the same old sinusitis or tonsillitis.

There is one type of acute ethmoid sinusitis, occurring especially in the young, that manifests itself rather violently, by external swelling of the face, with osseous involvement, and intracranial signs and symptoms, which is referred to as acute, fulminating ethmoiditis.

This particular type used to be much more common than it is today, and quite often an infected thrombus of the cavernous sinus was a complication. We seldom see this condition now, probably due to better general hygiene, early treatment with antibiotics, sulfonamides, vitamins, and early tonsillectomies. However, several months ago, an 11 year old girl, one of my patients presented this picture. By medication and other palliative measures, the infection "pointed" just below the eye and toward the nose. This was drained by an external incision, under local anesthesia, and when the acute condition subsided, all tonsils were removed. Now one would not know her as the same child. This is one condition where it is best to be conservative, which I usually am not, but veer just a little to the left. When conservatism seems the better part of valor one should follow it. Children are very tender, they have a lot of recuperative power too, so rarely is it necessary to operate on a child's sinus any more.

The above condition is one that I believe spreads the infection by way of communicating veins. The nose is especially rich in venous supply, so when the nose gets cold, it is a signal to turn on the heat, or close the vents. The nose is also very rich in lymphatics, and, as early as 1784, Wm. Hunter described the lymphatic system as the general absorptive system of the whole body, and I agree with him. No wonder we feel so miserable all over when we have a cold, or an acute sinusitis.

The next stage is chronic sinusitis, either suppurative or hyperplastic, which we will not discuss at this stage, except to say that hyperplastic sinusitis is characterized by an increase in the thickness of the mucous membrane, as a result of prolonged mild irritation. In hypertrophy there is an increase in the number of cells, especially of the connective tissue cells, and polypi are a later development of this condition. Children do not usually have polypoid sinusitis. In the suppurative type, there must be drainage, as

Hippocrates stated two thousand years ago,—"Wherever there is pus or urine, it must be drained."

We all know the other classical symptoms of acute ethmoiditis, as fever, sore throat, conjunctivitis, enlarged cervical nodes, cough, malaise, etc. But when these acute conditions subside, not enough emphasis is placed on the residual signs. Slight impairment of hearing in the young is an important signal for it is the beginning of complete deafness in adult life, and the time to start treatment is now. An x-ray examination of a child's sinus does not reveal much information. I believe transillumination shows just as much, can be done more quickly, and with less expense.

It would not be a bad idea, if all school children had a hearing test on entrance to school. Not all mothers realize that their children are getting hard of hearing because it comes on so gradually. Other mothers think it is just inattention of youth, and still others would not recognize the importance of the situation if they were told.

The same thing applies to seeing. It is amazing how many intelligent mothers do not know their child's vision is poor, or is even blind in one eye! The mother of a child just recently in my office, was embarrassed to tears to learn that her 9 year old daughter could see only 20/400 with one eye. Many children have a slight astigmatic error which can, I believe, be corrected if treated early. Thus, it may not be necessary to prescribe glasses for all of them. There is a reason for everything, and who can say that an ethmoid sinusitis may not have something to do with simple hyperopia or astigmatism? I have a great many children patients with about a half diopter of hyperopia or astigmatism, who have been improved greatly by treating their sinusitis, or removing their tonsils. However, this procedure does not seem to help if the child has a myopic error.

To sum up, I think any child who has trouble from the neck up, should have a thorough examination of his ethmoid sinuses. That goes for some things below the neck too, such as pyelitis, asthma, bronchitis, acute rheumatic fever, or any condition due to a hidden focus of infection. When a child's nose is blocked and he has the sniffles it detracts from concentration in school work. If this condition can be corrected I believe it would help lower the rate of juvenile delinquency. I have no use for foci of infection anywhere, whether it be weeds in the garden, germs in the human body, or communists in the American way of life.

We may not know what a cold is, or to what it is due, or how to prevent or cure one; we may not know what the difference is between a low-grade ethmoid sinusitis and a quiescent cold, but we can at least try to maintain normal conditions, alleviate symptoms and prevent complications of this condition.

Treatment

The treatment of ethmoid sinusitis in children, therefore, of necessity, begins at birth. Every pediatrician, or obstetrician, or whoever attends the child at birth, should examine the infant's nose for septal deflection, nasal dislocations, or fracture. The child travels through a pelvic tunnel, undergoing compression, with the soft nose pressed flat against the face, the septum taking the brunt of the force. It is a simple procedure to shift the nasal septum manually into the midline; by grasping the tip of the nose with the thumb and index finger, one often feels or hears an audible click as the caudal ends of the septum slip back into the columella bed. This insures better ventilation and drainage of the ethmoid sinuses by straightening the nasal septum.

It might be a good procedure to put braces on a child's teeth, when there is a high, narrow bony palatine arch, to lessen the vertical pressure on the nasal septum causing a deflection, and this should be started early.

Since it is of vital importance to maintain a clear nasal passage, I believe all mechanical obstructions should be corrected when conveniently possible. A deviated nasal septum in a child should be corrected early. It is not necessary to wait until the child becomes an adult, for then the damage has been done. I have never seen any ill-effects from a careful submucous resection in a child after 10 years of age. The deviated septum that needs correction most, is not the obvious one that can be seen by a casual glance in the nares, but it is the compensatory curved septum, high up and far back in the nose, that blocks the ethmoid opening, and obstructs the air

passage between the superior turbinates. For further discussion, I refer you to an article I published in the Laryngoscope.[1]

Another surgical procedure which should be mandatory in the treatment of all children with a "running nose," is a careful and thorough pharyngeal tonsillectomy (adenoids to you). Frankly, I cannot conceive of any good from a mass of adenoid tissue in any child's nose. They are at least, pathologic by position. As for the faucial tonsils, they are not much better. All children with frequent sore throats and enlarged lymph nodes of the neck, asthmatics, middle ear infections, with conductive deafness, or chronic conjunctivitis, should have their tonsils removed. After puberty tonsils never "grow back," if adequately done, and I have never seen any ill-effects resulting from a good tonsillectomy. I realize it would take a week to discuss this problem, so I will refer you to another article.[2]

In the medical treatment for ethmoiditis, I will avoid discussing the routine care of the child, its diet, and the like, leaving that to the pediatrician. We may skip the discussion of allergy too, though I would like to stress one point, namely to avoid a chill to the child's body, at any time. One does not permit fruits and vegetables to get chilled, since they will spoil, and likewise the human body is injured. A thermostatic balance should be maintained. The three turbinates of the nose are the radiators and air conditioners of the body, and when they swell up, from maltreatment, or other cause, they block the openings of the ethmoid sinuses, as well as the nasal passage. This blockage prevents drainage and ventilation, thereby inviting infection.

A mild isotonic solution, with ephedrine, (University of Florida Formula), is good medicine to drop in the child's nose to relieve congestion. Antihistamines accomplish much good, and used early they may subdue an acute condition of ethmoiditis, or a cold. Plain old aspirin is a good remedy for an accompanying headache, and a heating-pad is good for myalgia. When there are complications of bacterial invaders, the sulfonamides and antibiotics are the standbys. But penicillin for the treatment of the sniffles, or a cold *"per se,"* should not be used. The various cortone drugs are excellent in certain complications of the eye, but I had rather not comment as to the efficacy in sinusitis.

The group of scientists at the Naval Research Laboratory at Bethesda, Md., may soon find a vaccine; but, for the present, even their "adenovirus vaccine" is not the answer here.

Just recently there has been reported from Johns Hopkins, the development of a vaccine effective against the *JH cold virus,* which may be the "break-through" in finding a preventive treatment for the common sniffles. Personally, I think it is important to keep up the salt balance in all cases, where a great amount of fluids is lost.

Conclusion

I am enthusiastic on the subject of ventilation of the nasal passages, as well as drainage from infection. Everything must be in motion. Our orange groves need air drainage, to protect against freezing; our houses need ventilation and air circulation to prevent mould and staleness. Even our brain needs stirring up now and then to keep the cobwebs out, and give us new ideas. Just because we can breathe through the lower part of our nose, does not mean that air is circulating well at higher levels and around the openings of the ethmoid sinus and superior turbinates.

If there is mechanical obstruction, such as adenoids and a deviated septum, these must be corrected surgically, and the sooner, the better.

Finally, I hope the child does not have to come back to your office 40 years from now saying—"Doctor, I've had a post-nasal drip all my life, now I have a buzzing in my ears, and I don't hear so well. I also have lost my sense of smell. My eyes burn, and the light hurts them, I can't see to read fine print. I have a dull ache on the left side of my head, and a little rheumatism in my neck and shoulder. You don't suppose I'm getting old?"

If so, tell him to come to Florida. There are a lot of good cities, like Miami and Ocala, where,

"No price is set on the lavish summer,
June may be had by the poorest comer."

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Discussion (Abstract)

Dr. Warren W. Quillian, Coral Gables, Fla. The implications of the general discussion in this presentation are a bit disturbing to many of us engaged in the general practice of pediatrics. A very high percentage of our daily efforts is devoted toward measures of prevention and symptomatic therapy for relief of respiratory infections in infancy and childhood. One may agree with the accepted postulate that obstruction or stasis in the upper respiratory tract, whether due to edema, trauma or organic encroachments upon the natural lumen, may, and frequently does, predispose to infection. However, clinical experience indicates that the causes are many; and that they may test the diagnostic skill of the physician in charge.

Measures designed to lessen severity and delay the onset of allergic symptoms in a potentially allergic infant may be instituted when the baby is yet unborn by modification of the mother's diet in accordance with well-established principles.[1] Many of these infants, uncontrolled, will subsequently exhibit "sniffles" and a marked tendency toward acquiring nasal blockage, allergic rhinitis or acute respiratory infections. Preventive measures and elimination of sources of environmental inhalation sensitization are quite important after birth. The allergic response in general is usually exaggerated during the prodromes of viral infections, and is often suppressed during the height of the disease.

Sympathomimetic drugs have been used and abused for topical treatment of nasal congestion. But vasoconstriction will not solve every problem of nasal blockage. Topical treatment of nasal infections should produce the desired effect without interfering with the physiologic mechanisms which aid the nose in its own reaction to infections. There should also be freedom from undesirable rebound congestion or unfavorable systemic manifestations.[2]

Hypertrophied adenoids, cysts, polyps and deviated septa may require surgical treatment. But judgment and timing are as important as technical skill. Careful attention to the mechanism of nasal obstruction will usually reveal a rationale for effective treatment.

Early recognition of impaired hearing in children is very important. But temporary impairment frequently occurs during the course of an upper respiratory infection, and is not followed by permanent loss of hearing if adequately treated.

Early conservative management of these respiratory conditions and the judicious use of measures available to all of us will usually bring comfort to the small patient. This avoids any necessity for radical surgery during early infancy and childhood. A combination of proper nasal drainage, suction, and occasional use of selected antibiotics or chemotherapeutic agents has, in most instances, controlled infection.

Dr. Charles C. Grace, St. Augustine, Fla. It is indeed a privilege to discuss this most excellent paper which we have just heard by Dr. Turnley. The question of allergy as a basic cause of ethmoiditis in children should not be completely overlooked, particularly food allergies. The most common offenders in the young are wheat, milk, eggs and citrus juices, especially orange juice. The history should be very carefully taken and if one of these offenders should be suspected, it can very easily be eliminated from the diet.

If the child is old enough and its confidence can be gained, the use of cortisone injections in the turbinates as reported by Wall and Shure, is of tremendous benefit in reducing the edema of the turbinates and promoting ventilation and drainage. The technic briefly, is to anesthetize the anterior tip of the lower turbinate with a 0.5% solution of Pontocaine on a small cotton pledget and inject cortisone 0.1 in 0.3 cc. of normal saline. This is placed high near the attachment of the lower turbinate in order to avoid the large blood spaces and is repeated at about ten day intervals until three injections are given.

The use of antihistamines, as Dr. Turnley has stated, are sometimes of tremendous value, but shrinking agents should be very cautiously and carefully used.

In regard to submucous resection in children, this may be necessary, but extreme caution should be used in order that the nasal framework not be disturbed and future development of the nose not impaired. If it should be necessary to remove a portion of the cartilage, this should be carefully saved and replaced in the form of chip grafts along the method described many times by Lierle. Thank you again for the privilege of discussing this paper.

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Rupture of the Pregnant Uterus in the Last Trimester

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The authors consider the causes of rupture of the uterus, prevention, diagnosis and treatment.

RUPTURE OF THE UTERUS at or near term is a serious complication of pregnancy. This problem was recently studied at the Columbia Hospital for Women (Table 1). This study includes 71,998 deliveries in a period of 21 years, the analysis being focused particularly upon those aspects of the etiology and management which might avoid maternal death in the case of rupture of the uterus. Three cases, including one having two ruptures with survival, are reviewed in detail since they substantiate sound principles of management when this complication is suspected.

Table 2 classifies the ruptured uteri of this series. Traumatic ruptures and those after cesarean section were clearly leaders as etiologic factors and were of almost equal incidence. These two types of rupture will be discussed in detail. The etiologic factors of lesser significance, i.e.,—neglected labor and the injudicious use of Pitocin,—will be dealt with briefly. No significant change in the incidence of rupture has occurred at Columbia Hospital in the 21 years (Table 3). Eastman gives 1:2000 as the average incidence for this accident as 1 per 2,000; in this study the incidence is one rupture for every 2,999 deliveries.

Rupture of a Cesarean Scar

This study reveals the marked change which has occurred in the type of cesarean operation performed (Table 3). In 1936, at the Columbia Hospital, there were 49 sections in 2,052 deliveries. These included 46 of the classical type, 3 cesarean hysterectomies, and no low cervical sections. By contrast, the 1956 figures reveal 206 sections in 4,584 deliveries. These were divided as follow: 180 of the low cervical type, 12 classical sections, 10 cesarean hysterectomies, and 4 extraperitoneal sections. The table shows that post-cesarean ruptures increased in each quarter of the study. The actual incidence varied only from 1 per 333 sections during the first quarter, to 1 per 268 sections in the last, but the number of cesarean scars available for rupture was much larger.

TABLE 1

RUPTURED UTERI IN PREGNANCY
COLUMBIA HOSPITAL FOR WOMEN

(21 year study 1936-1956)

Incidence	1:2999 (24 cases in 71,998 deliveries)
Reported incidence	1:1100 to 1:3000
Section rate during series	3:61% (2,603 sections)
Maternal mortality	8.4% 2 deaths
Fetal mortality	56.0% 14 deaths

All of the post-cesarean ruptures were subsequent to classical procedures. There were no ruptures following low cervical sections. Occasionally one hears an obstetrician, who has just done a second low cervical section, remark that the lower segment was about to rupture as he did the operation. However, in this series there were no instances of rupture of the lower segment. It must be remembered that the lower segment normally may be thinned out to 2.4 mm. at its thickest point. It is significant that in this 21 year period 1,078 low cervical sections were done without an instance of uterine rupture subsequently. Eastman[1] quotes the likelihood of this accident occurring in an old cesarean scar at 1 to

TABLE 2

CLASSIFICATION OF RUPTURES

1. Previous section—10 cases or 41.6% (Average reported 37%)
2. Other causes
   a. Spontaneous 5 cases or 20.8% (Average reported 30%)
   b. Traumatic 9 cases or 37.5% (Average reported 33%)

†From the Columbia Hospital for Women, Washington, D. C.

3 per cent. The present study suggests that more reliance can be placed on wounds of the lower segment than on the classical incisions. This view is shared by Donnelly[2] whose report included ruptures of a lower uterine incision 3 of which were vertical and 4 transverse with no fetal or maternal deaths.

This present series contains an interesting case of two ruptures after cesarean section with survival. A brief case history follows.

Case 1. Mrs. B. D., age 40, a gravida II, para I, with the expected date of confinement of Nov. 9, 1950, was admitted at 34 weeks gestation on Sept. 29, 1950, with a history of pains every 15 to 20 minutes since 12:45 A.M. that morning. Her past obstetric history revealed that she was delivered 2 years previously of a live male infant (birth weight 2,600 Gm.) by a classical cesarean section. The indication was placenta previa.

She was given morphine, 15 mg., in the hope that what was interpreted as false labor would abate and prevent the delivery of a premature baby. However, the pains continued, and 4 hours after admission she was taken to the operating room for another section.

On opening the peritoneum a large amount of old dark, but unclotted blood gushed forth, and a complete rupture of the previous classical cesarean scar was found. A 2,050 Gm. premature, dead, female infant, in its membranes, was found free in the peritoneal cavity; half of the placenta projected through the rupture. The fetus, placenta and membranes were removed without difficulty. No other rents were found in the uterus; the edges of the wound were scarified and the uterus was closed in three layers. At no time was this patient in poor condition and the postoperative course was smooth except for considerable difficulty with ileus which required Wangensteen suction for 3½ days.

Two years later a spontaneous abortion occurred at 2½ months.

Another 2 years later she conceived again. The expected date of confinement was Nov. 11, 1954. However, because of severe abdominal pain she was brought to Columbia Hospital on Oct. 4, 1954, again at approximately 34 weeks gestation. The blood pressure was 60/40, there was abdominal rigidity, and a mass approximately the size of a 7 months gestation was noted. Fetal heart tones were not audible.

Less than one hour after admission, and simultaneously with a transfusion, a cesarean hysterectomy was begun, the patient still being in mild shock with a B.P. of 80/60 in spite of a previous transfusion. On opening the peritoneum a situation almost identical with the 1950 episode was found. There was a large quantity of old and fresh blood in the peritoneal cavity; a 1,950 Gm. dead infant, still confined in the membranes, had been extruded from the uterus. This together with the placenta was easily removed and a supravaginal hysterectomy was done. Three pints of blood were administered during and after the procedure. The postoperative course was quite uneventful. She was discharged on the 8th day.

Discussion. A summary of the clinical data for the cases in this series is shown in table 4. This reveals 10 ruptures after cesarean section with no maternal deaths and a fetal mortality of 50 per cent. The only 3 ruptures that occurred before 37 weeks were after a classical cesarean section, and these ranged between 30 and 33 weeks. It is evident that ruptures in classical cesarean scars cannot be prevented at this stage. Perhaps with the routine use of low cervical operations, which rarely disrupt prior to term or at the onset of labor, the threat of this type of rupture can be materially reduced. In any event, a history of previous cesarean section, in particular the classical operation, as well as of other operative scars in the fundus must put one on the alert. A previous low cervical section does not justify complacency when considering rupture of the uterus, but it is a source of some comfort. With a history of previous operation the attending physician must give immediate attention to any complaint of abdominal pain or other untoward symptom.[3] The treatment will be discussed later.

Traumatic Rupture

Most reported series of ruptured uteri show a higher maternal mortality in the traumatic and spontaneous varieties than in those following cesarean section.[4] This is undoubtedly due to a lower index of suspicion in such patients and a delay in diagnosis. In the Columbia Hospital study there were 9 cases of traumatic rupture and the 2 maternal deaths occurred in this group. The fetal mortality was

TABLE 3

SECTIONS AND RUPTURES BY FIVE YEAR PERIODS

			Sections				*Ruptures*			
Years	*Deliveries*	*Rate*	*Classical*	*Low Cervical*	*Porro*	*Extra-peritoneal*	*Rate*	*Post-cesarean*	*Spon-taneous*	*Traumatic*
1936-40	10,676	3.10	274	26	31	2	1:2669	1	3	0
1941-45	16,050	3.55	432	97	38	7	1:4012	2	1	1
1946-50	18,718	3.34	353	201	37	34	1:2340	3	0	5
1951-56	26,554	4.03	235	754	61	31	1:3319	4	1	3

TABLE 4

CLINICAL DATA

Case No.	Ward	Private	Age	Gravida	Para	Previous Vaginal Delivery	Previous Section	Largest Baby	Gestation Weeks	Onset of Rupture In Pregnancy	Onset of Rupture In Labor	Onset of Rupture Pituitrin	Site of Rupture	Type of Rupture	Result—Infant	Result—Mother	Treatment
1		W	30	2	1	0	Class[1]		38	yes	0	0	Old scar	Prev. C.S.	S	L	Porro section
2	W		29	7	6	6	0		38	yes	0	0	Fundus	Spont.	S	L	Porro section
3	C		35	4	3	3	0		40	0	16	0	Low seg.	Spont.	S	L	Porro section
4		W	35	2	1	1	0		38	yes	0	0	Ant. wall	Spont.	S	L	Porro section
5		W	37	4	1	1	0		40	0	8	0	Low seg.	Spont.	L	L	S.T. hysterectomy
6*		W	28	2	1	1	0	3040	40	0	15	yes	Low seg.	Trauma	N	D	S.T. hysterectomy
7		W	25	3	2	1	Class[1]	2650	40	yes	0	0	Old scar	Prev. C.S.	L	L	Repair—tubal ligation
8		W	22	3	2	0	Class[3]		37	yes	0	0	Old scar	Prev. C.S.	S	L	Porro section
9	C		27	3	2	2	0	3490	40	0	7	0	Fundus	Trauma	L	L	S.T. hysterectomy
10		W	23	4	3	2	Class[1]		31	yes	0	0	Old scar	Prev. C.S.	S	L	Repair—tubal ligation
11		W	36	4	2	2	0		40	0	8	0	Low seg.	Trauma	N	L	S.T. hysterectomy
12		W	33	4	2	1	Class[1]		38	yes	0	0	Old scar	Prev. C.S.	L	L	Porro section
13		W	33	3	2	2	0		40	0	1	0	Low seg.	Trauma	L L	L 0	S.T. hysterectomy
14	W		27	4	3	3	0		40	0	76	0	Low seg.	Trauma	S	L	S.T. hysterectomy
15		W	24	1	0	0	0		38	0	18	yes	Low seg.	Trauma	S	L	S.T. hysterectomy
16*		W	40	2	1	0	Class[1]	2600	38	0	7	0	Old scar	Prev. C.S.	S	L	Class. section
17	C		23	3	2	2	0	4000	40	0	18	0	Low seg.	Spont.	S	L	Porro section
18	C		30	4	2	2	0	3490	51#	0	0	yes	Fundus	Trauma	S	L	Porro section
19		W	24	2	1	0	Class[1]		37	yes	0	0	Old scar	Prev. C.S.	L	L	Class. section
20		W	34	2	1	1	0	2750	40	0	20	0	Low seg.	Trauma	L	L	S.T. hysterectomy
21	C		29	4	3	0	Class[3]	2925	32	yes	0	0	Old scar	Prev. C.S.	L	L	Porro section
22*		W	44	4	2	0	Class[2]	2600	33	yes	0	0	Old scar	Prev. C.S.	S	L	Porro section
23	W		27	2	1	0	Class[1]	2810	38	0	5	0	Old scar	Prev. C.S.	L	L	Porro section
24*		W	37	2	1	1	0	4725	40	0	40	yes	Low seg.	Trauma	L	D	Supportive

S—Stillborn
*—Case report
L—Living
#—Missed labor
N—Neonatal death
O—Twins
D—Death
C.S.—Cesarean section

50 per cent. Both of the cases in which the mothers were lost are described below and demonstrate the high liability which comes with delay in diagnosis.

Case 2. M. S., a 28 year old gravida II, para I, at term, entered Columbia Hospital for induction of labor early on the evening of Oct. 29, 1941. In June, the preceding year, following a 17½ hour labor, she was delivered normally of a living 3,000 Gm. infant.

After castor oil, quinine and a hot soda enema were ineffective in producing labor, she was given 1 min. of Pituitrin subcutaneously and labor started rather promptly. Eleven hours later she was delivered, upon a frank breech presentation, by total breech extraction with considerable difficulty, 19 minutes elapsing between delivery of the umbilicus and the mouth. The infant weighed 3,600 Gm.; the heart continued to beat for 5 minutes, but there were no respirations. A third degree laceration and the perineotomy were repaired. The immediate postpartum condition was described as "good."

Two hours after delivery she was found to be pulseless and in profound shock. The uterus was firm and there was no excessive external bleeding. Supportive care was given without benefit, and 4 hours after delivery a consultant was called. Digital examination at this time revealed a cervical laceration. Forty-five minutes later a supracervical hysterectomy, without anesthesia, was performed. A hole in the left lower uterine segment was palpable. During this crisis she received 4 pints of blood and 2 units of plasma. Eight hours and twenty minutes after delivery she was dead.

Case 3. Mrs. E. D., age 37, a very obese gravida II, para I, entered Columbia Hospital July 27, 1956, at term. Her past obstetric history revealed the normal delivery of a 3,700 Gm. infant 2 years previously. She was having irregular cramps with no progress and after several hours observation was transferred to the delivery ward for surgical induction. Four hours after rupture of the membranes no significant change had occurred and I.V. Pitocin 1:2500 was started. Progress continued to be slow, and 6½ hours after the I.V. drip was started a second sterile vaginal examination was done. At this time the vertex was in the transverse position and at the spines. The cervix was completely effaced and dilated to 6 cm. The patient was rested and x-ray pelvimetry was obtained. This was entirely normal.

The following morning I.V. Pitocin was again begun and 11 hours later she was prepared for vaginal delivery. The head delivered relatively easy but considerable difficulty was encountered with the shoulders. Completion of delivery required approximately 5 minutes and was accomplished only after considerable pressure on the fundus had been added to manipulation at the introitus. The infant weighed 4,725 Gm., had a fractured humerus, but weathered a stormy neonatal period and survived. The cervix and sulci were inspected and were intact. The patient reacted normally, vomited a small amount of watery fluid.

One-half hour after delivery she became restless and complained of abdominal pain. The fundus was firm, there was no excessive bleeding; the Pitocin was discontinued and morphine 15 mg. was given. One hour later she was found to be cyanotic, cold and clammy. The pulse and blood pressure could not be obtained. Because of the minimal abdominal findings and the possibility of aspiration atelectasis, she was treated with supportive measures, and vasopressors to combat the shock. Her color improved markedly, but the response otherwise was transient and poor. Cardiac resuscitation was attempted terminally. She was dead 4½ hours after delivery. Postmortem examination revealed a rupture of the lower segment of the uterus and massive hemoperitoneum.

Discussion. Maternal deaths following traumatic rupture of the uterus must be viewed as avoidable in modern obstetric thinking. In any case of immediate postpartum hemorrhage, manual examination of the uterus for retained secundines or unsuspected tears is not only advisable but mandatory.[5] Acken[6] advised this in 1940. When there is probability of injury to the cervix or lower uterine segment, even without significant external bleeding, manual exploration of the fundus and lower segment and inspection of the cervix are sensible precautions. These steps should not be omitted after forceful fundal pressure has been applied during the second stage. The truth of this observation is witnessed by case 3, and 3 similar instances in the study reported by Gordon and Rosenthal.[5] The delay in diagnosis caused by failure to conduct such an examination is critical. The signs and symptoms which rupture of the uterus can produce have been well classified by Parker and associates.[3] The fact that abdominal examination is most frequently misleading in these cases has been pointed out by others.[7] This is particularly true if the patient is in shock.

Donnelly,[2] in stressing the prevention of this accident emphasizes the dangers of "version and extraction, craniotomy on an unengaged head and manual dilatation of the cervix as three very dangerous operations." He advises against their use in modern obstetrics, and by enforcing these and other regulations traumatic ruptures in his study were reduced from 11 cases in 46,044 deliveries in the first half of the series to one instance in 55,083 deliveries the last half. Table 5 reveals that 4 of the 9 traumatic ruptures in this study involved breech deliveries in 2 and versions in 2. Pitocin was given in 4 of these cases, but was believed to be insignificant. In one of these intravenous Pitocin, which was not effective,

TABLE 5

TRAUMATIC RUPTURES OF UTERUS

1.	M.S.	1941	Difficult breech
2.	M.G.	1947	Shoulder presentation—version and extraction
3.	L.S.	1947	Partial placenta accreta—manual removal attempted
4.	R.S.	1948	Version and extraction—2nd twin
5.	M.S.	1948	Frank breech
6.	W.E.	1950	Face presentation, fetal abnormality (teratoma of sacrum)
7.	R.S.	1952	Voorhees' bag, cervix packed, multiple Pitocin inductions
8.	E.F.	1953	Midforceps rotation and delivery
9.	D.H.	1956	Vigorous fundal pressure; severe shoulder dystocia

was followed by the use of a Voorhees' bag in an attempt to establish effective contractions in a case of missed labor. This case has been reported previously and is included in the traumatic group because of the repeated operative procedures.[8] Unfortunately, a study of table 3 shows an increased incidence in traumatic ruptures of the uterus in the second half of this series.

Spontaneous Rupture

Many factors have been implicated as the cause of spontaneous ruptures of the uterus. Advanced parity and age, obesity, oxytocics, infants weighing over 4,000 Gm., tumultuous labor, amputation of the cervix, abnormal presentations, fetal abnormalities, unrecognized cephalopelvic disproportion and neglected labors have all been mentioned. Most of these factors are relative and are seen daily without incident in an active obstetric service. The others have been essentially eliminated as problems in modern obstetrics. Intravenous Pitocin in dilute solution is employed rather liberally on the obstetric service at Columbia Hospital and no rupture attributable to its use is recorded. Furthermore, Pitocin was not employed in any of the spontaneous ruptures. Adequate prenatal examination, including x-ray pelvimetry, and a controlled trial of labor have set a pattern for the management of the problem of cephalopelvic disproportion, and long neglected labors are seldom seen. Spontaneous rupture of the uterus must be prevented because it is almost uniformly fatal to the fetus and is a substantial threat to the mother. In the present series there were 5 spontaneous ruptures with no maternal deaths but with a fetal mortality of 80 per cent. This absence of maternal loss is unusual and quite fortunate. Here again an awareness of the signs and symptoms of rupture of the uterus is essential to avoid a critical delay in diagnosis.

Treatment

The advent of antibiotics, readily available whole blood, and excellent anesthesia have improved the prognosis for the patient who has rupture of the uterus (Table 6).[9] However, Garnet[7] and others[4] have stressed that the only hope for improving these statistics, especially those for fetal survival rests with the prevention of the accident. The over-all fetal mortality in this study was 56 per cent. This figure, although alarming, is slightly below the average reported.[1] For intelligent obstetric management of this problem, constant awareness of those conditions which predispose to uterine rupture must be maintained. Malpresentations, abnormalities of the fetus which produce mechanical problems, and the multipara with ruptured membranes, strong labor and a nonengaged presenting part are examples of situations which require critical observation. Once rupture has occurred all authors stress prompt replacement of blood and laparotomy; most advise hysterectomy. McElrath[10] states that operation should not be delayed because of shock. The patient in this report who had rupture twice with survival tends to confirm this view.

TABLE 6

COMPARATIVE MATERNAL MORTALITY RATES*

Author	*Cases*	*Deaths*	*Rate Per Cent*
Dugger[12]	105	65	61.9
Eastman[1]	53	25	47.1
Morrison & Douglass[13]	45	19	42.2
Donnelly[2]	39	11	28.2
Brierton[14]	57	19	33.3
Daniel & Inman[15]	9	1	11.1
Voogd, Wood & Powell[9]	12	1	8.4
Kramm & Colliton	24	2	8.4

*From Voogd, Wood and Powell[9] with addition of our series.

Summary and Conclusions

1. A 21 year review of rupture of the pregnant uterus at Columbia Hospital has been presented.

2. Maternal mortality figures have been materially improved, but the condition still carries a grave prognosis for the fetus and remains a substantial threat to the mother.

3. An interesting case of uterine rupture on two occasions has been reported. (Only one other such case has been reported.[11])

4. The findings at Columbia Hospital indicate that with the substitution of the low cervical section for the classical, rupture after cesarean section will be greatly reduced as a serious threat to the mother and infant.

5. Good obstetric evaluation and observation will greatly reduce spontaneous ruptures and, likewise, judicious obstetric care and technic will minimize the traumatic ruptures.

6. Delay in diagnosis and management of rupture of the uterus is critical. Manual examination of the uterine cavity following difficult vaginal operations or vigorous pressure on the fundus is stressed.

7. The only hope of reducing the fetal mortality in this condition is to lower its incidence.

8. With the therapeutic aids available today a maternal death due to a ruptured uterus should be avoidable.

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Vocal Cord Strain*

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"VOCAL CORD STRAIN" is a common expression used by the lay public to explain an audible, abnormal voice quality. It is used particularly by those who demonstrate an intermittent hoarseness, or dysphonia. Public speakers in the pulpit, or otherwise, testify to the strain, both physical and emotional, of producing all of the desired vocal qualities before an audience. Since the television screen demonstrates so clearly the musculature effort required of concert singers, new meaning has been found in Zerffi's[1] series of articles concerning the physical exertion of maintaining a controlled vocal tone by forcing a singing voice. Such daily experiences make us cognizant of the easy acceptance by the public of the thought that vocal cords, like skeletal musculature, can be strained.

Since the structure and function of the components of the larynx are more familiar to the physicians, the term "vocal cord strain" rarely appears in our literature. It is used occasionally by educators,[2] psychologists,[3] neurologists,[4] and those interested in vocal rehabilitation.[5-7] Although it is not adequate as a synonym for abuse of the vocal cords, it will probably remain in usage as an expression of communication. If this usage continues the clinician should allow for a wider connotation of the word "strain." Thus, the strain will not be of the vocal cords, but will be of the emotional content of the patient. Fowler[8] notes that "strain implies an overactivity beyond proper limits. Hard work is rarely sufficient to cause damage unless there are unfortunate overlays of anxiety or frustration factors involved, under which circumstances, it becomes 'strain.'"

In many people who exhibit the results of abuse of the vocal cords, emotional strain and insecurity are in the immediate background, and the audible voice thus becomes the projected evidence of past and current difficulties. Usually these people are not aware of the influence their emotional content has on beginning and continued abuse. Management of these cases may be singularly unsuccessful until the physician realizes that the unrecognized reasons for the continued abuse may be more powerful than the conscious desire for relief from the annoying dysphonia.

This paper relates to an investigation of cases demonstrating varying degrees of abuse of the vocal cords. Of particular interest were those patients who had not been able to develop a normal voice after operation for benign tumor. For the present study it seemed appropriate to exclude all but those who demonstrated chronic nonspecific inflammation, and/or proven benign tumors. The group used for sampling was individually and personally selected from those with whom the best rapport had been maintained.

The clinical history was correlated by hindsight methods, with psychologic testing by technical advisors. Controls for speech therapy were also evaluated in some instances. During the course of this study certain information of medicolegal interest was uncovered and has been considered.

Since this paper is directed toward seasoned physicians, the complex overlapping pathologic changes of chronic inflammation of the larynx and its sequelae will not be discussed as such. It is known[9] that in the presence of repeated infection continued vocal abuse of the cords will cause initially chronic inflammation to appear, and that eventually, under certain conditions, a benign tumor will occur.*[10]

Most of the current literature concerning benign tumors of the vocal cord considers only the standard clinical entities. The emo-

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*The term "benign vocal cord tumors" is that suggested by Salinger[10] to include all those nonmalignant entities pathologically described as "edematous or hyperemic fibromata," "singer's or vocal cord nodules," "vocal polyps and papillomata" and "nodosa fibrosa." Salinger demonstrates that all of these lesions arise from the subepithelial space of Renke, and assumes the various histologic appearances, depending upon the degree of irritation and the particular histologic element involved.

tional influence on abuse of the vocal cords is discussed by Jackson and Jackson,[9] but in comparison to the beautifully demonstrated and classically expressed analysis of the pathologic lesions, the prior discussion is apparently almost perfunctory. On closer study it is evident that even these learned teachers have found difficulty in describing clearly the profound influence of the unrecognized emotional content of these patients upon the cords.

The investigators interested in facets of disease influenced by stress have demonstrated that there is an organ susceptibility to pathologic disease under the conditions of emotional stress.[11] The factors determining this selectivity remain unclarified. It is suggested by Dunbar[12] that perhaps disease, following long periods of hypermotility, might be engendered by frustrations and conflicts experienced in the unconscious past of the patient. Those technical writers interested in the psychology of the speech profile in disease can readily identify emotional imbalance and dysfunction, resulting in alterations of tone quality, rate, and rhythm of the voice.[7] Briess,[13] in a recent article, indicates that organic disease of the voice may be classified by types and treated as such. Those interested in the pathologic disturbances of speech indicate that subjects with anatomic disease, as well as functional disorders of the voice, should be referred to laryngologists. If such referrals are to be of value to patients with complications of the voice, laryngologists must develop a better insight into the problem than that demonstrated by the virtual absence of previously documented interest in the subject. Heaver[4] shows that projective psychologic testing will reveal an accurate profile of the unconscious emotional background of such a patient, and suggests that psychotherapeutic technics will be helpful in proper management of such cases.

The material for this paper was selected from a decade's therapeutic survey of laryngeal cases currently under way in my practice. The breakdown of the current total case-load, with subdivisions by diagnoses, is indicated in table 1 to show the percentage of the sampling.

The samplings of the total case-load used in this correlation study include many of the patients who had demonstrated an inability to gain proper speech control in spite of persistent treatment and counseling. Biopsy had been done once in 14 of these cases, and twice in one. Five patients, not operated upon, but having had repeated episodes of chronic inflammation, were chosen as controls.

TABLE 1

TOTAL NUMBER OF CASES
JULY 1, 1948—JULY 1, 1957

Diagnosis of Dysphonia	*Number of Cases*
A. Paralysis of:	
Pharyngeal musculature	1
Vocal cords	4
B. Acute laryngitis	61
C. Chronic specific laryngitis	
Gummatous	1
Tuberculous	3
D. Chronic nonspecific laryngitis	200
E. Benign tumors, not operated upon	81
(Minimal change, under observation—61)	
F. Benign tumors operated upon	96
G. Cancer of larynx	41
Total	488

(NOTE: All overlapping diagnoses omitted)
From the above, 5 cases of nonspecific chronic laryngitis and 15 cases of proven benign tumors were selected for correlation.

All of the patients of the control group, shown in table 2 and all of the group having benign tumors, table 3, had been given classical treatment of rest of the voice, steam inhalations and repeated urging to learn to produce speech under relaxed conditions, from the initial visit. All complications were likewise treated when indicated. Where technical aid in developing control of speech seemed necessary, the patient was referred to a speech therapist. All patients who had been operated upon were re-examined at regular intervals for one year, and thereafter whenever an episode of hoarseness did not resolve after a period of two weeks. The patient was never told that removal of the tumor would mean that his tonal quality would return to normal, but he was urged to have this potentially dangerous bit of tissue removed, for his own safety. He was instructed that the quality of the voice would return slowly as he learned a new production of voice by relaxation and the discontinuance of the habits of abuse of the vocal cords.

Tables 2 and 3 indicate that some of these cases were studied by a speech therapist for a period of observation of from 1 to 4 months. In all, there was noted moderate to severe tensions of the laryngopharyngeal muscula-

TABLE 2

VOCAL CORD STRAIN—CHRONIC NONSPECIFIC INFLAMMATION

Case No.	*Age*	*Sex*	*First Examination*	*Initial Treatment*	*Speech Therapy*
1	53	F	9/18/53	Classical	No
2	38	F	2/4/55	Classical	Yes
3	48	M	2/26/55	Classical	Yes
4	47	M	6/5/56	Classical—antihistamines	Yes
5	46	M	6/27/56	Classical—antihistamines	Yes

ture, usually associated with shallow respiration and stridency. To the speech therapist, the hypermotility noted in most of these cases resulted in an inadequate air stream with faulty resonance. In each, familial or occupational stress seemed to intensify the defect.

Careful questioning of the patient who did not demonstrate return of his vocal quality showed that he actually did not know why his habits of vocal abuse were continued. Though mass research by questionnaire may indicate what the patient consciously remembers and what he feels, it cannot indicate the forgotten incidents which motivate his current unrecognized emotional attitude. The latter is unveiled if the physician commits the tactical error of expressing chagrin at the patient's inability to develop new habits of voice production.

Since the disappointed, hostile patient becomes an unhappy problem of management at the best level of rapport, from the standpoint of the laryngeal surgeon, investigation into the unconscious motivation of vocal abuse seems to be indicated. Such studies in the fields of psychology and psychiatry have been done in many ways for years. However, since the meaning of the language in these areas is so different from that used in most of the other specialties, communication is difficult. Nevertheless, since the consulting clinical psychologists and interested psychiatric interpreters were available, this correlative study was undertaken.

TABLE 3

VOCAL CORD STRAIN—BENIGN TUMORS

Case No.	*Age*	*Sex*	*First Examination*	*Report of Biopsy*	*Speech Therapy*
6	59	F	10/5/55	Polpy of vocal cord	Yes
7	58	M	4/14/52	Singer's nodule	No
8	27	F	2/27/53	Papilloma of vocal cord	No
9	48	M	4/27/53	Polyp of vocal cord	No
10	46	M	8/28/53	Adenoma of larynx	No
11	49	M	1/25/54	Leukoplakia, nodular chorditis	Yes
12	40	M	4/14/54	Papilloma of vocal cord	No
13	48	M	12/15/54	Edema, singer's nodule	Yes
14	43	M	12/13/55	Laryngeal nodule with leukoplakia	Yes
15	37	M	1/6/56	Laryngeal nodule	No
16	34	M	9/5/56	Polyp of larynx with inflammation	No
17	49	M	11/7/56	Chronic laryngitis	No
18	65	M	1/2/57	Polyp of larynx	No
19	27	F	7/29/53	Laryngeal polyps	Yes
20	32	F	4/30/57	Edema of vocal cord	No

On reflection, the whole emotional content of the uncomfortable patient may vary from day to day, as do the components of his circulating blood. However, his basic drives and conflicts will generally show the same pattern. The laryngologist unsophisticated in the field of psychology needs a simplifying mechanism to gain something of the general factors active in the background of abuse of the voice. It has been suggested that projective testing* will achieve this end. Acceptance of standard tests, which may be limited in application, will thus serve his purpose.

The need for projective testing was presented negatively to all of the patients in both study groups. Any expected gain to the patient was denied. Thus, a patient's rejection of such an examination could be accepted without rancor or antipathy on either side. On the other hand his acceptance of an appointment with either of the paid consulting clinical psychologists gave the sympathetic appearance of granting a favor to his physician.

We chose for this series of examinations the Rorschach[14] "ink blot" test and the House-Tree-Person test. The psychologists were asked: (1) to examine the quality and degree of emotional content present in terms of diagnosis; (2) to demonstrate the broad factors of influence in the emotional life of the patient; (3) to indicate the competency of his adjustability to the conflicting emotions; and (4) to suggest whether his insight might be developed to a point of conscious acceptance of the need for psychotherapy.

After the patient was welcomed by the psychologist, he was asked to draw a house, a

*Projective tests introduce vague stimuli to the patient, who responds by projecting himself and what he thinks into the results of the test.[16] The patient is projecting when he rationalizes, represses, suppresses or sublimates.

tree and a person in the image that these objects called to mind, rather than an artistic production as such. Following this, ten Rorschach ink blots were presented in the usual manner, followed by inquiry. This is normal procedure, and the scoring from these tests was done in similar manner.[15]

Case Histories

As was noted above, cases 1 to 5 were chosen as controls, no operation having been done. Cases 6 to 20 were selected postoperative cases of benign tumor which the patient had demonstrated, on repeated examination, a normal appearance and a normal voice, but had also exhibited evidence of an abnormal voice.

Case 1. M. K., W, F, 57, widow, no children, observed for 4 yrs. Chronic laryngitis, many episodes. Not psychotic. Adjustment, insecure, conflictive but rigid. Has obsessive compulsive tendencies, arising from passive hostility to authoritative figure. Confusion of sexual identification—rejection of male figure. Perfectionist—inner drives are conflictive, not creative, not comfortable. Responds to criticism by withdrawal. No possibility of insight, no acceptance of therapy. Will reject personal physician.

Case 2. L. C. T., W, F, 40, married, divorced, remarried, 2 children. Observation 2 yrs. Chronic nonspecific laryngitis. Teacher. Not psychotic. Inadequate, insecure adjustment because of conflict of dependency. Needs others but denies needs. Rejects the male and denies the female image. Confusion of sexual identification. Inner drives are in conflict, not creative, not comfortable. Withdraws from aggression. No chance to develop insight. No acceptance of psychotherapy. Will reject personal physician.

Case 3. S. N. Y., W, M, 50, single, observation 2 yrs. Chronic nonspecific laryngitis. Civil service engineer. Not yet psychotic but marked tendency to schizoparanoid, mild anxiety with secondary depression, obsessive compulsive tendencies with projected hostility due to marked inadequacy and immaturity with confusion of sexual identification. Rejects own homosexual tendencies, over rejects female. Shows active open aggression to hostility, to criticism, or other threat. Inner drives are very creative, productive and conflictive. Is uncomfortable. Questionable ability to develop insight in accepting need for psychotherapy. Will reject personal physician.

Case 4. M. P. B., W, M, 48, single, observation 1 yr. Chronic nonspecific laryngitis. Successful supermarket operator. Not psychotic. Adjustment inadequate and insecure because of conflict of dependency. Adjustment is characterized by passive-aggressive characteristic, slight anxiety secondary. Depressed hostility. Immaturity and inadequacies because of active and conflictive need for others. Repressed response to authority. Meets aggression passively. Sexual identification with mother. Withdraws from argument—sensitive to criticism. Inner drives are very creative, productive, conflictive but not comfortable. Slow development of insight—has accepted needs for therapy. Needs reassurance by personal physician.

Case 5. R. F. R., W, M, 47, married, 2 children, observation 1 yr. Chronic nonspecific laryngitis. Heavy construction division foreman. Not psychotic. Has paranoid tendency due to sublimated hostility, immaturity, insecurity and anxiety with secondary depression due to guilt. Projective response to authority with rejection of female figure. Over-identifies himself with male. Active response to argument. Depression when criticized. Inner drives are active, productive, conflictive but not comfortable. Chance for development of insight and therapy questionable. May reject personal physician.

Case 6. H. E. S., W, F, 61, widow, 2 children, 4 grandchildren, observation 2 yrs. Benign tumor. Not psychotic, adjustment insecure because of passive, aggressive reaction to hostility and dependency. Fears authoritative figures. Meets aggression passively. Has body concern. Rejection of male figure, identifies with female. Social relationship artificial due to inadequate and passive dependency on others. Passive to criticism. Inner drives are not creative or productive or comfortable but are conflictive. No development of insight or acceptance of psychotherapy. Will reject personal physician.

Case 7. L. H. W., W, M, 63, widower, 3 children, 6 grandchildren, observation 4 yrs. Benign tumor. Insurance agent. Not psychotic. Profile has structural characteristics of anxiety, projective hostility, insecurity, immaturity and dependency to persecution and passive body fears. Active response to aggression, hostile to authority, rejection of father image. Identifies himself with mother. Very dependent, hostile to criticism. Inner drives are not creative, productive or comfortable. Adjustment is rigid with no chance of development of insight or acceptance of psychotherapy. Will reject personal physician.

Case 8. A. C., W, F, 31, married, 2 children, observation 4 yrs. Benign tumor. Profile shows active free-floating anxiety and severe depression with secondary obsessive feelings and self referred hostility. There is immaturity, inadequacy, insecurity, leading toward suicidal trends. Immature, dependency and over-identification with father. Mother figure rejected. Artificial and poor social relationship. Conflicted sexual identification. Is sensitive and withdraws completely on criticism. Inner drives conflicting leading to depression. Good chance for development of insight and psychotherapy with reassurance by personal physician.

Case 9. N. W. W., W, F, 52, married, observation 4 yrs. Benign tumor. Not psychotic; mild anxiety. Obsessive compulsive feelings of paranoia—projective active hostility leading to persecution. Immature and inadequate with passive dependency. Repressed and projective response to authority. Rejects father, conflicts with mother, with resultant conflicting sexual identification. Is self-centered, perfectionist, conflictive. Poor chance for development of insight. No acceptance of psychotherapy. Rejection of personal physician.

Case 10. W. H. L., W, M, 52, married, 1 child, observation 4 yrs. Benign tumor. Oil executive. Profile shows much depression, insecurity, immaturity, in-

adequacy leading to anxiety. Hostility is projective leading to persecution. Active hostile response to authoritative figure with rejection of father and identification with mother. Sexual identification: female. Self-centered. Passive response to argument—withdrawal from criticism. Inner drive repressed—not productive, not comfortable, conflictive. His adjustment is withdrawn and rigid with no ability to develop insight nor to accept therapy. Will reject personal physician.

Case 11. O. W. S., W, M, 52, married, 1 child, observation 3 yrs. Benign tumor. Grocery chain executive. Active anxiety with depression—active hostility, inadequacy and conflictive tendency feelings. Passive response to authority with development of body fears. Rejection of female and sexual identification of male. Social relationships are well controlled but withdrawn. Conflictual dependency on others. Very self-centered. Perfectionistic. Others opinions do not influence him. Passive, withdrawn, response to criticism. Inner drives are creative, productive, conflictive and uncomfortable. He has no chance to develop insight or accept therapy. Will reject reassurance by personal physician.

Case 12. W. J. B., W, M, 43, married, divorced, 5 children. Benign tumor. Restaurant operator. Adjustment is passive, aggressive, conflictual one which arises from immaturity, inadequacy and free-floating anxiety. There is passive repressed hostility with secondary depression, conflictive dependency, repress response to authority, rejection of male figure—inadequate relationship to others, but is very dependent on others. Very self-centered, but other opinions influence him. Sexual identification: is repressed or feminized male. Withdraws in response to argument. Sensitive to criticism. Inner drives are immature and conflictive. Questionable chance for insight development or acceptance of need for therapy.

Case 13. H. C. R., W, M, 51, single, observation 3 yrs. Benign tumor. Civil service clerk. Adjustment is characterized by anxiety with secondary depression to sublimated hostility and guilt. There is insecurity and inadequacy with conflictive dependency needs. Reality contact is good. Passive response to authority. Rejection of male figure. Self-identification with the female. Artificial social relationship. Very self-centered, but dependent on others. Passive response to argument and criticism. Inner drives are creative, productive, conflictive, is fairly comfortable. Some chance for development of insight but will not accept need for therapy. Will reject personal physician.

Case 14. J. R. W., W, M, 45, married, two children, observation 2 yrs. Benign tumor. Small bus line operator. Not psychotic. Profile is characteristic of hysteria. Free-floating anxiety associated with guilt, passive, insecurity and immaturity. Passive response to hostility with body concern. Rejection of female—repressed hostility. Very dependent on others—passive response to argument and criticism. Inner drive is productive, creative, but repressed. Adjustment is hampered by anxiety and inability to handle hostility. Good chance for development of insight and need for therapy. Will not reject personal physician.

Case 15. C. M. M., W, M, 38, married, two children, observation 1 yr. Benign tumor. Civil service machinist. Not psychotic. Profile is characterized by artificial appearance with active anxiety and obsessive, compulsive feelings of withdrawal. Is inadequate and immature with active response to hostility—rejection of both father and mother figures with social identification as male. Dependent on others. His response to argument is active—to criticism is oppositional. Reality contact is good. His inner drives are not creative—not productive—not comfortable. They are in conflict. No chance to develop insight or need for therapy. Will reject personal physician.

Case 16. R. A. W., W, M, 35, married, observation 1 yr. Benign tumor. Crane operator. Profile shows free-floating anxiety, secondary depression and a conversion hysteria from obsessive compulsive feeling—hostility is repressed—there is a conflictual dependency—active hostility to authority—rejects male figure. Self-identification with female. Passive dependency on others. Passive and withdrawn response to argument and criticism. Inner drives are creative, productive and conflictive, but not comfortable. Fair chance for development of insight—possibility of accepting need for psychotherapy. Rejection of personal physician.

Case 17. G. B., W, M, 50, married, one child, observation 1 yr. Benign tumor. Contractor. Profile is characterized by rapid changes of need between anxiety, depression and obsessive, compulsive feeling. Unstable response to hostility but open active response to aggression. Very inadequate, immature, conflictual response to dependency—rejection of male figure—self-identification with male figure. Social relationships are controlled but withdrawn. Over passive reaction to aggression unless pressed. Conflictual dependency on others. Active response to argument; passive to criticism. Inner drives are creative, productive, conflictive, but not comfortable. Adjustment characteristic of anxiety with passive handling of hostility. Little chance for development of insight or acceptance of need for psychotherapy. Will reject personal physician.

Case 18. S. P., W, M, 65, widower, one child, two grandchildren, observation 6 mos. Benign tumor. Retired auto dealer. Free-floating anxiety, projective, aggressive hostility leading toward paranoia—conflictive and resistive to dependency feelings, but inadequate and immature. Active hostile response to authority with rejection of the female figure. Male sexual identification. Inadequate social relationship. Response to argument, oppositional and resents openly any criticism. Inner drives are repressed, not productive, not conflictive, not satisfying. Little chance for development of insight—no acceptance of therapy or reassurance by physician.

Case 19. V. S., C, F, 27, single, observation 4 yrs. Benign tumor. School teacher. Not yet psychotic but is incipient paranoia. Has free-floating anxiety—unstable obsessive compulsive feeling and projective hostility leading to persecution. Reality contact poor. Passive hostile response to authority—rejection of both male and female figures. No sexual identification. Self-centered and artificial response to criticism and argument. Inner drives are conflictive, sublimated, confused and uncomfortable. Adjustment is characterized by anxiety and inability to handle hostility. Chance for development of insight is good. Acceptance for

need for psychotherapy is fair. Reassurance by personal physician will give no aid.

Case 20. E. E. M., W, F, 32, married, three children, observation 3 mos. Not psychotic. There is active free-floating anxiety with secondary depression—obsessive compulsive feeling and repressed hostility. Is very inadequate, immature and insecure. Has passive dependency. Reality contact good. Meets aggressive and authoritative figures passively—rejection of male figure. Artificial withdrawal of social relationship—very dependent on others but conflictual sexual identification as female. Passive response to argument and criticism. Inner drives are not creative, productive, nor comfortable. Conflicts exist. Adjustment characterized by anxiety, passive handling of hostility. No chance of development of insight or acceptance of psychotherapy. Will reject personal physician.

In recapitulation, all 20 of the patients having strain of the vocal cords and who were resistant to treatment have been shown to have unstable emotional reactions. Diagnostically, all showed as their common structural characteristics, inadequacy, anxiety and hostility. Nineteen patients had anxiety of varying degrees; 9 showed secondary depression, one of whom had suicidal tendencies. Nineteen patients demonstrated varying conflicts based on immaturity, insecurity and inadequacy, and the contact with reality was poor in the other. Conflicts surrounding the parental figures existed in all cases with varying degrees of mother dependency equaling mother rejection or denial. Repressed hostility occurred in 12 cases, and 8 demonstrated projections of hostility leading to trends of persecution and paranoia.

In terms of diagnosis, there were 3 cases of anxiety-based conversion hysteria, 3 cases of obsessive compulsive tendencies, 6 cases of passive-aggressive character disorders, and 8 cases demonstrating persecution and paranoid reactions. Also, it has been shown that 12 patients have little chance of developing insight, that 5 have a fair chance, but only 3 will accept guidance and therapy. This report of patients in apparent good rapport demonstrates the continuing unrecognized emotional conflicts in their lives which produce among other things an inability to avoid continued vocal abuse. The report that 8 of 20 have indicated paranoid trends, excites the attention of the alert surgeon, and indicates the delicate degree of competent management necessary in such cases.

The private physician, who must balance his time and skills to the needs of his practice and his economic liabilities, while agreeing to the need for additional background on the inadequacies of therapy, rarely can engage in personal research. Frustrated by the language barrier of psychoanalysis, he may evade the problem of attempting guidance of the dissatisfied patient, dysphonic postoperatively, and court the danger of giving the impression of negligence and/or abandonment. Harassed by prior knowledge of public disapproval, he is further hampered by ignorance of whether the patient is amenable to psychotherapy. He will eagerly welcome a simplified selective mechanism, which may be done by a technical aide and which will indicate differences between those cases which he can probably manage successfully, and those which he cannot. Such knowledge will fortify his resolutions to share the responsibility of cases indicating aberrations of a more serious nature. In this limited application of projective testing, the diagnoses and broad factors of conflict, as well as indications of dangerous trends and probable response to therapy, have been demonstrated at a cost equal to that of an x-ray examination of the chest.

Conclusions

1. It is suggested that the term "vocal cord strain" be considered to have a meaning of an emotional background.

2. It is suggested that continued abuse of vocal cords, even after operation for benign tumor, is the result of unconscious conflicts and frustrations of the emotional content.

3. Analysis of a group of 20 such cases of intermittent dysphonia is demonstrated to show the information obtainable by psychologic projective testing.

4. Recapitulation of the diagnoses indicates the uncovering of several severe cases of incipient disorders of character.

Acknowledgment

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Discussion (Abstract)

Dr. Edward W. Stevenson, Birmingham, Ala. Dr. Callahan is to be congratulated for his presentation as well as for his efforts to stimulate thought along a different line of approach to a relatively common lesion.

There are a number of avenues that must be explored much more carefully before these conclusions can be considered valid.

1. *Surgical technic.* Prime prerequisites for good return of voice are that: (1) a careful removal of the tissue has been done, a removal of *all* abnormal tissue; and (2) without injury to the underlying elastic and muscle structure. A measure of this could be gained only from a compilation of a number of large series of similar surgical results performed by laryngologists noted for their meticulous surgical habits. The personal equation certainly *must* be considered and eliminated before any percentage figure dealing with functional results can be accepted as valid for the syndrome as a whole.

2. I would like to know what these psychologic tests show in a cross section of the normal population, as well as what it might show in a group of patients who have had less than ideal results from therapy designed to correct *other* physical abnormalities, for example, chronic cholecystitis, where no psychologic "tie-in" is especially strong. I wonder if it is not *normal* to develop some abnormal paranoid reactions, feelings of hostility, and inadequacy as a result of a chronic illness of almost *any* type, but *especially* when the result of therapy was not as good as was expected. Dr. Callahan mentioned, the whole emotional content of the patient may vary from day to day, as do the components of the circulating blood.

3. Assuming, (1) that the surgical technic was flawless in these cases, and (2) that the psychiatric make-up of the patient contains no more antisocial trends than the average, is it not safe to assume that some of the difficulty in regaining a good voice might have resulted from poor motor patterns set up during the period the lesions were present, in an effort to overcome the difficulties of approximation that it caused? Dr. Spencer Brown mentions this factor prominently in his chapter on Disorders of Speech and Voice, in Coates, Schenck and Miller's recently published loose-leaf text.

In summing up, then, I wish to point out that there is little in the literature, thus far, to substantiate the line of thought expressed in this paper. Most of that which is printed deals with the theoretical and speculative side of the question, and some of it sounds good. I do not feel that any conclusions can be drawn from this relatively small series, especially since most of the surgical work was performed by only one surgeon. There are many interesting facets to this problem which would provide stimulating study, and which must be studied in larger groups before conclusions can be reached. I believe it was Dr. Callahan's aim to stimulate such further investigation rather than to try to prove a point. If, as a result of this paper, others take up the question and honestly review their own cases and report their findings, then we will all be closer to the truth, and Dr. Callahan's efforts on behalf of the question will be well rewarded. On the other hand, if we take a distorted and premature view of this work, and use supposed psychologic imbalance to explain poor surgical results, then great harm would result.

Office Management of Industrial Orthopedic Disorders*

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The author outlines his methods of applying heat to traumatized areas.

TWO YEARS AGO, before this Section, I presented a paper entitled "Office Physical Therapy—What It Cannot Do."[1] At that time treatment was reviewed in a group of 100 industrial cases in which disability had been prolonged due to: (1) incomplete diagnosis; (2) inadequate physical therapy, or (3) premature termination of adequate treatment.

Today, I shall describe those physical therapy measures which have proved most effective and which are within the capabilities and usual facilities of the office of the industrial physician treating ambulant patients.

In a recently injured area with a marked inflammatory reaction, especially where joints are involved, the desire to rush into aggressive physical treatment must be tempered by a consideration of conservative splinting. A policy of watchful waiting is especially valuable in injuries of the hand where rest, in a functional position on aluminum or plaster splints, for several days is frequently of far greater value than any of the physical therapies. In hand injuries, however, prolonged immobilization in the presence of edema may lead to fibrosis and a stiff hand.[2] The patient must be instructed to use a sling and to maintain the hand, when at rest, above the level of the heart. Elevation is an antigravity measure that is more effective in draining a swollen hand than any amount of massage. Furthermore, every uninjured joint in the hand must be carried actively through a complete range of motion many times a day. Plaster splints must be so trimmed that every joint segment not requiring immobilization is left free.[3] Responsibility lies with the physician for activities involving a complete range of motion, since the patient will cooperate only if he is regularly checked and encouraged periodically.

The hot paraffin bath is the best form of heat for the hands. Repeated dipping of the hand until a thick hot paraffin glove develops, left on for 20 minutes, and then massaged free has proved itself the best agent in softening stiff hands and overcoming spasm and pain. Following paraffin therapy, the Mennell[4] manipulations for stiffened metacarpophalangeal and interphalangeal joints is useful for stretching tightened and shortened collateral ligaments. This is the only passive movement for finger joints that has a rational basis and is occasionally effective. To overcome tightness of the interdigital web, active exercise in the clasped-hand position with interlaced fingers will help stretch these areas.

In the treatment of acute bursitis of the shoulder it is imperative that the patient be off his feet and the affected shoulder and arm supported on a pillow. In this position the use of ice packs is valuable.

Crushed ice in layers between towels, and wrapped in Pliofilm can be fitted to the contour of the entire shoulder area. With decrease in tissue temperature there is a marked analgesic effect. As the inflammation subsides application of heat will help overcome the spasm in the muscles of the involved shoulder girdle.

Incidently, the analgesic effect of the ice pack is invaluable following hydrocortisone injection for acute bursitis of the shoulder (tendonitis), since the hydrocortisone's effect will not be apparent for 12 hours, while the effect of the ice pack will be felt immediately.

Each of us has a preference for his own pet thermal measure. My personal preference is for moist heat as hydrocollator packs. Hot

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packs are the basic unit for the industrial office since,—(1) several patients can be treated simultaneously, (2) multiple areas can be treated easily on the same individual, (3) low cost, (4) easy application, and (5) no electrical hazard.

Given a choice of high frequency equipment, I select microwave diathermy over conventional diathermy because of its convenience and versatility. The cost of maintenance is practically nil. One can treat a patient from head to toe, and it can easily be applied by any office aide since there is practically no technic involved. With the reflected energy of the microwave unit and its adequate air spacing, there is less hazard of accidental burn than in short wave, since the patient is not coupled into the circuit. With microwave the patient can be treated on a metal table with impunity as there are no high tension cables to "short out" against metal.

Ultra-sound therapy is a penetrating form of energy that must be used with caution since there are mechanical effects attributed to it that can be destructive to tissues. On the basis of heating efficiency alone it may be used interchangeably with other devices.

In spite of the claims as to the singular advantages of one form of electrical equipment over another, all that any of them can do is to heat deep tissues efficiently. Dosage is still a matter of patient's tolerance. No one as yet has been able to demonstrate clinically the superior value of any specific thermal measure. Heat is still an empiric therapy that can increase circulation, secure muscular relaxation, and improve nutritional status of tissues. In injury it can alleviate pain and stiffness, but heat will not maintain or restore joint motion, prevent contractures, nor aid in developing muscle power. Heat therapy should serve as a prelude to treatment that will influence these conditions. Whatever the heat source, it must be supplemented by massage and/or exercise. Massage will relax muscles in spasm, and will stretch the areas of tightness. Massage does not have to be administered by an expert. A few basic strokes carried out by a thoughtful and considerate office nurse serves as an ideal preparation for exercise by the patient. The encouragement and stimulation offered to the patient by the laying on of hands must never be underestimated.

Today, a clinical entity more frequently seen and recognized is the cervical syndrome. We know that for any obscure pain about the head, face, neck, or upper extremities, an examination for lesions of the cervical spine must be considered. The increased incidence of rear end car collisions, brings into the office the so-called "whiplash" injury in which all the supporting structures of the head and neck may be involved, but primarily muscles and ligaments.

For this type of injury traction is almost obligatory. Cervical traction is an office procedure.[5] The most effective method is horizontal traction with flexion of the neck at 35 degrees. Properly applied, horizontal cervical traction will immobilize the patient, reduce muscle spasm, enlarge intervertebral foramina and thus diminish nerve root pain. Overhead or vertical traction administered in line with the long axis of the body applies most of its force under the chin and tends to hyperextend the neck. X-ray studies of the neck for overhead traction reveal considerable hyperextension of the chin but demonstrate little change in cervical alignment, and none in the neural foramina, therefore, I have abandoned this form of traction. Despite adequate treatment for the disabilities mentioned above there are patients who do not get better. A definite time limit, say two weeks, should be established for evidence of improvement. At the end of this period physical therapy should be discontinued until reasons have been elicited for patient's failure to improve.

The patient with a musculoskeletal injury who does not respond to adequate physical therapy deserves re-evaluation. A clinical review with respect to areas of tenderness, degree of joint dysfunction, evaluation of muscle strength and localization of areas of tightness will help pinpoint the diagnosis. For instance, in a shoulder injury that is still painful after a two week course of physical therapy, the shoulder and neck should again be carefully examined. The pain, poorly localized, may stem from a lesion of the cervical spine or within the shoulder itself, there possibly may be a tear of the rotator cuff.

The patient with persistent backache following an acute back strain, incurred after lifting, rarely has a ruptured disc. Repeated strapping with adhesive in the management of these backs is worthless. Strapping offers no real support, and ruins the patient's skin and his disposition. If a back support is indicated only a lumbosacral corset expertly fitted and then checked by the physician is of value.

If back symptoms persist after 14 days of adequate treatment, search must be made for an associated static disability such as a short leg or a transitional vertebra. In addition, examination must be made for a neurologic deficit. New x-ray films at this time may reveal a fracture of a body or a transverse process previously not demonstrable.

The patient with a sprained contused knee, who has had 14 days of physical therapy and is still disabled by limited and painful motion of the joint deserves re-evaluation. Stability of the joint and integrity of the ligaments can now be completely checked, for by this time the element of sprain has subsided and torn ligaments, if any, can be detected. Atrophy of the quadriceps if present, is readily demonstrated at this examination.

In summary, I consider the basic thermal therapies for the industrial office to be the hot paraffin bath, the hydrocollator moist heat packs and microwave diathermy. It is stressed that heat should be used as a prelude to massage and therapeutic exercise. For the cervical syndrome, I believe horizontal cervical traction is superior to overhead traction. And finally, symptoms that persist unimproved after 15 days of adequate physical therapy require a clinical review before more therapy is prescribed.

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Discussion (Abstract)

Dr. Darius Flinchum, Atlanta, Ga. I would like to endorse all of Dr. Pruce's presentation. Physical agents usually are nonspecific methods of therapy, and the entity under treatment may not offer a clear or definite diagnosis. Some personality must be given this treatment along with reassurance. One cannot throw these agents at, or on an individual and expect relief. Supervision and help with therapy from the doctor is most desirable.

Dr. Pruce very aptly stressed the value of further examination, should the desired response not be obtained rather promptly.

I would like to stress, also, the value of a few days immobilization in a functional position for an injured joint, before physical therapy and motion is begun. It is especially helpful, as stated, in injured fingers and hands.

Independent Industrial Medical Practice*

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IT IS NOT UNCOMMON for one engaged in an industrial medical practice to hear such remarks as, "He has it very easy practicing industrial medicine," or, "His is a simple type of practice and look at all the money he makes," or "You don't have to be much of a doctor for that type of work." These come not only from members of the medical profession who are obviously unfamiliar with the many facets of the practice of industrial medicine, but also from uninformed laymen. It is pointless to discuss the background or reason for such remarks, for those engaged in the private or independent practice of industrial medicine know it to be a complex and quite difficult branch of medicine,—not the sinecure that many think it is. One has to be a very resourceful doctor plus a talented businessman, plus other things to be a real success in this field. Nevertheless it is a challenge and most gratifying to those who succeed.

How does one go about establishing, organizing and operating a small private medical clinic to exclusively serve industry? (I speak of industry in the broad sense which includes all working people, since their work relates to their jobs and their jobs relate to their employer.)

First, the need for such medical services must be considered because it certainly would be unwise to limit one's practice if the demand were not there. It is my guess that a city of not less than 100,000 people, with diversified and concentrated industry should probably be the minimum size. Of course, thought must be given to other established clinics of the same kind in the area. If they exist it is important to obtain all the information one can about them. *Are they busy?* If so, why? One should obtain as much information as possible about their location, professional personnel and the reputation they have among employers and insurance carriers. It is only by studying these facts that one can intelligently evaluate the need for additional industrial medical service in any particular locale. However, *do not let competition scare you!* Where there is one successful industrial medical clinic there is usually room for another.

In evaluating the need for a clinic, one should also take into consideration how much industrial practice is done on a part-time basis by other physicians in the city or community. There are not very many pure industrial medical clinics in this country. In my experience, employers, insurers, and frequently even employees, find it more convenient and more serviceable to concentrate their medical needs by using a clinic of this kind.

Once one has convinced himself, and possibly others, that a new or another industrial medical clinic is necessary in the town, one must then determine the best location for it. This is not simple for there are no hard and fast rules, though there are certain important considerations. One should try to be as close as possible to the core of a concentrated segment of industry. This pertains more to the larger cities than to the smaller urban areas. *Time, travel* and *traffic* are important and vital factors to plant management in choosing the medical facilities for their employees. In a smaller town with less concentrated industry, where traffic and congestion are not a major problem, the choice of location certainly should be close to the factories, but not necessarily among them. I must repeat, *there are no fast rules,* for industry may stretch out for miles along a river or railroad, or concentrate factories on the side, back, and front of each other.

Regard for *parking* and the *accessibility* of the clinic are other important considerations. Frankly, in choosing my own location, park-

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ing was first in importance to me because I believe adequate parking is extremely essential. It is imperative also, unfortunately, that one consider parking space for your own personnel as well as for visiting patients.

The Clinic Should be Easy to Find. If possible, it should be on the corner of two wide streets and either on, or close to, thoroughfare with heavy traffic. It is important for the place to be distinctly visible and, equally as important, that as many people as possible know of the location.

If the plan is to put up a new building, make sure it is discriminatingly attractive and pleasantly different. There is nothing wrong with its looking like a medical clinic in an area of straight-walled factories. If it is too costly to build a new building, there often are plenty of old ones in the area, and many of them can be made most attractive. However, it will need the spending of some money. In a rental the landlord might improve it and take it out in rent and sweat. Above all one should not take space in the corner of an old factory building, but rather locate in an individual small building, but large enough so that all services can be carried out on one floor.

I am established in an old, brick building that originally housed the offices for a trucking concern. Behind the building were sheds and platforms for freight. I had the sheds torn down and used part of this area for parking. The dirty bricks on my building were sand-blasted, and shutters were put on the windows. When it was finished, it looked so good that a national organization contemplated using it in one of its advertising programs. For its attractiveness, I give all credit to my wife, for it was her good taste that directed the decoration of the clinic.

After establishing the need and finding a location, one must consider the internal design of the clinic. I am far from being an architect, but I drew my own plans to fit the available space and they worked out despite some errors. However, I would suggest that unless one is skilled in this field, it is best to feed ideas to the experts and let them produce the necessary drawings. The number of rooms one needs should be based on the size of the anticipated practice. The size of rooms, however, need have no relation to the size of the practice, except possibly the waiting room. It is better that the clinic be too large rather than too small and, in addition, consideration should be given for future expansion. Personally, I feel that the minimum space and arrangement should be such that it can comfortably handle 100 patients a day. This does not necessarily mean that one must have that many patients daily, but one may have this many some day, and even more. Of course, one should not give immediate thought to planning a special clinic if one expects to treat less than 35 patients a day.

Basically the following should be provided:

1. *A Waiting Room*—Light, comfortably large, and attractive.

2. *A Business Office*—This should be large, for office personnel will grow almost as rapidly as professional personnel. (The number of my office force is the same as that of my nurses and doctors.)

3. Next, you should have *two emergency surgery rooms,* tiled if possible, and each one separately equipped, including oxygen.

4. *A utility room* is essential. We refer to ours as "the kitchen," for nearly everything goes on there, from eating meals to doing urinalyses. This room should contain an autoclave, refrigerator, hot-plate, Bunsen burner, sterilizers, a work table, and a lot of cabinet space, for towels, sheets, and of course, the very essential coffee pot. In addition, there should be space for "odds and ends."

5. *Physiotherapy* is essential in the practice of industrial medicine and much of it should be done. Thus, cubicles or rooms must be provided. They need not be large, yet space should be available to handle three or four physiotherapy patients at one time. The equipment for this treatment may vary, but diathermy, moist steam packs, weights and pulleys, whirlpool baths, and paraffin baths will be quite valuable to you.

6. It is a good idea to have at least *two lavatories,* one for patients, and one for personnel.

7. *An x-ray room* and *a dark room* are also basic requirements. One should use x-rays freely because they are needed in litigation, as well as for diagnosis. (Maximum protection should be provided to both patients and especially personnel.)

8. *Consultation Rooms*—There should be at least two, but three are better. They should be attractively furnished, and be equipped to do physical examinations. If one's practice is large enough, one of them should be used for a business manager.

Such things as air conditioning, adequate storage facilities, space for filing, as well as sufficient telephone extensions and telephone lines, are a few of the many more details that have to be considered in office planning.

Personnel. An industrial medical practice does not function like the private practice of medicine. One cannot put a sign on the door, "office hours 10 to 12, or 3 to 5." Working people can be hurt at any time, and often

need immediate attention. Treatment has to be made available night or day. Ideally, the clinic should be best open on a 24 hour basis. This, however, is not always practical, but it is essential that it is open and always available during the entire working day. If one has adequate hospital arrangements, and the companies for which one provides service are properly instructed, the hospital accident rooms can handle the majority of injuries that occur in the evenings and during the night. This to me would be a second choice. True, it is expensive and difficult to employ physicians to work a night shift, and it would be most unwise for one to work such hours himself. In my case the problem was solved by using third and fourth year medical students, who are in the offices from 6 p.m. until the following morning when the nurses arrive. (Fortunately, I am within walking distance of the University of Maryland Medical School.) It has been my practice to use three students so they work every third night and every third week-end. In our clinic we have only a limited amount of emergency night work and the student is advised to give first aid only. He is also instructed to call one of the clinic physicians and discuss the case with him on the phone. If it is considered to be serious enough, the physician will come to the office and see the patient. Otherwise, the patient is advised to return to the office during the next day. If students are not available to you, first-aid men or nurses may be used but less economically.

Aside from the need for specialists to whom it is necessary to refer some of the patients, to follow a rule of the thumb, I would say that one physician on a full-time basis can care for a patient load of approximately 45 per day. Double this number and one needs two full-time men, triple it and three are needed. A doctor may start out in this kind of practice by himself, and as his practice increases take on associates on a part-time basis, increasing their time as the practice grows.

Industrial physicians have additional responsibilties, and sometimes more serious ones than do other physicians. Not only do they have to consider what is best for the patient, but must consider the reaction and problems of the employer and the insurance carrier. It takes a long time for the doctor to develop the proper balance in his efforts to please all of them. He must exercise diplomacy, tact, a lot of good medical judgment, as well as keep in mind that often the injured worker hurts a lot worse and a great deal longer than does the private patient who is paying his own bills and being treated on his own time. The doctor must not lose sight of the fact that the employer is concerned about the welfare of the worker, not only out of sympathy, but out of hard economic facts, and therefore the doctor has to take positive action always. This action is to promote rapid recovery and eliminate malingering. He must be ready, willing and able to defend his judgment in court and before compensation referees. He must know something about the law and medical testimony. There is a great deal more to be said about the practical experience and other "know-how" needed by doctors in this field. So one must keep in mind this important bit of information when associates are added to the practice.

Nurses or a reasonable facsimile of them, are essential of course. It is better that they be experienced in industrial work, but one can easily train a good nurse, and along with the proper quota of doctors she can assist in caring for approximately 50 to 60 patients a day. Many nurses have experience in taking x-ray pictures, and the first nurse should be able to do this. If one is treating more than 60 patients a day, it is much better to have two nurses, or one nurse and an x-ray technician, the latter to do some nursing work also. Many offices employ two full-time nurses, one of whom is also an x-ray technician. I have this arrangement in my office and it works out well.

A physiotherapist is a valuable asset for your industrial clinic, but it is not economical to have such an employee on a full-time basis unless the practice is very large. Of course, one may be fortunate enough to find one who can do nursing work as well, and thus utilize him or her in both capacities. In cases where manipulative therapy is needed, I would suggest that one refer this work, or have the therapist come to the clinic to work and be paid on a per case basis, if such arrangements can be made.

The number of medical reports necessary is of great magnitude and must be properly and correctly handled. Each compensation

case requires no less than two reports, the original report of injury and the final report and bill. In order to keep the insurance carrier informed as to the progress of treatment, particularly in cases where there is lost time from work, follow-up or interval reports are essential. In addition, it is often necessary to write narrative reports for numerous situations. It should be noted that in other forms of practice the patient is seen and treated, and usually one accounts to no one else. In industrial practice, aside from numerous reports to the employer and insurer, one is plagued with phone calls from them, making frequent inquiry concerning the patient and his progress.

From the above, it is quite obvious that adequate general office help is needed, and as I stated earlier, it is essential to have approximately one nonprofessional employee for each professional employee. In my office there are four girls handling the clerical, stenographic and receptionist work. The one who is the receptionist also does some typing of reports and answers the telephone. Two other girls are medical secretaries, one of whom also acts as office manager. The fourth girl does some bookkeeping and in addition is billing clerk.

Independent industrial medical practice means exactly what it says. One is not an employee of anyone, but furnishes medical services either on a fee basis per patient visit or on a contract basis. In the latter there is a written or verbal agreement with the employer or the insurance carrier which pays "X" number of dollars per year to perform all or certain portions of the needed medical sevices for the employer. Contracts frequently are arranged directly with the employer, and it is usually with those who are self-insured. On occasion an insurance company will contract with the doctor for services for a specific employer it insures. Arrangements for billing in these cases can be made either monthly, quarterly, semi-annually or annually. Otherwise, billing in the majority of cases, which are on a per patient basis, is done after completion of treatment of each individual patient.

Too often industrial medical practice is construed as being the child of big business only. This is far from correct. Practice, in the main, will most likely come more from the smaller places than from the larger ones, and not necessarily smaller factories either. People work, get hurt and sick in laundries, bowling alleys, restaurants, department stores, trucking companies, barrooms, stevedoring companies, shoemaking shops and hundreds of places.

One must remember that this type of practice is a combination of profession and business, and although it is important to adhere to all medical ethics, it is equally as important to function in a practical and business-like manner. The premise that you and your associates are good doctors is taken for granted, and that all of you will perform to the best of your ability. But do not forget you cannot twiddle your thumbs and sit around waiting for patients to come in. Once it has been established that there is a need for a clinic, and one has located and created facilities to perform, it is needless to say that during this time, one should have also informed employers and insurance carriers of one's availability. Most probably, before entering this specialty on a full-time basis, the doctor did some industrial medical work along with other practice. Because of this, he has created friends and acquaintances in the field of industry and insurance, who are necessary to advance the cause. The industrial physician must keep moving forward. As a surgeon entertains his nonsurgical colleagues to encourage them to use his skills, so must the industrial physician entertain insurance company and business officials to inspire them to use his expert abilities or facilities.

You must sell yourself and the services you have to offer, and above all never take the back seat of mediocrity when in the practice of industrial medicine for, if anything, you are a front runner in a fertile, diversified field and many lengths ahead of the mob!

Our Position in the Problem of Cerebral Palsy*

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Cuba is also developing a program for the rehabilitation of the child having cerebral palsy, as is being done in other countries. This paper outlines the plans for such activities.

Definition and Incidence

THE TERM "spastic" is synonymous to the British and in Latin America with cerebral palsy, though it is more vague and inconclusive than we would like at this time. "Cerebral palsy" is a term which has been popularized by Phelps in the United States over the past 18 years, and has been adopted by the lay public to designate the types of paralysis and crippling effects which arise from lesions of the brain, in contradistinction to injuries or disease of the spinal cord, the peripheral nerves or to the extremities themselves.

We believe that uniform terminology would be of a great profit to a universal and better understanding as to diagnosis, evaluation, treatment, statistics and investigation in the growing field of cerebral palsy. Therefore, in Cuba, we have adopted the term "Cerebro Parálisis" and have named our institution *Unidad Cerebro Parálisis de Cuba.* Cerebral palsy may be defined as a neuromuscular disability caused by lesions in the motor center of the brain before birth, at birth, or during infancy and childhood. The disturbances of motor function include spasticity, weakness, incoordination, athetosis, rigidity and/or tremors. The brain damage may not only produce neuromuscular dysfunction but frequently causes mental retardation, sensory disorders, convulsions, disabilities of the eye and ear, and behavioral disorders as well. It is difficult to assess the number of children having cerebral palsy, but it is known that the incidence of cerebral palsy is only exceeded by that of poliomyelitis. Surveys reveal that the number of cases in any given area is always greater than the number reported, and since the condition does not occur in epidemics the number of cases occurring is approximately the same from year to year.

It is estimated that there are approximately 6,000 persons with cerebral palsy in Cuba, 2,000 of whom are under 21 years of age.

Cuba has become aware of the growing interest in the rehabilitation of patients with cerebral palsy, and a number of institutions have instituted programs for the integral care of cerebral palsy. Thus, we have the Mercedes Hospital, ONRI, Roosevelt Rehabilitation Center, Instituto de Cirugía Ortopédica and Unidad Cerebro Parálisis de Cuba. In Argentina there is the Asociación Pro-Ayuda al Niño Espástico, and Professor José Alberto Piqué held a symposium on cerebral palsy in 1953. We believe that in the near future there will be a C. P. Unit in each Latin-American country and to do this we must coordinate North and Latin American efforts.

The Association of United Cerebral Palsy of Cuba is young having been established only two years ago. This grew out of the efforts of a very small group of professional men who felt that existing services failed to meet the needs of the cerebral palsied children. These men were familiar with the integral care of cerebral palsy and after seven years of work in this field they decided to unite their efforts and form one association, the "Unidad Cerebro Parálisis de Cuba" which is a voluntary organization working for the public health and welfare under the principles of democracy and majority action. It is the purpose of *Unidad Cerebro Parálisis*

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de Cuba to see that every cerebral palsied individual, regardless of the extent or nature of his handicap, has the benefit of a complete habilitation program, starting with the elemental fact of identification and carrying through until he has reached his optimum potential as an adult.

Functions and Services

Patients are accepted for clinic services and treatment regardless of age, degree of impairment, social background or residence. No fees or charges are made for clinic services. Patients are admitted for medical diagnosis, evaluation, treatment and training upon the referral of a physician, hospital, health or welfare agency or at the request of a parent or interested individual. At the time of admission the patient must be referred by the family physician if there is one. A medical history and social service evaluation are secured before the patient is seen by the Medical Director. After the medical examination the patient is given an evaluation by the entire clinic team consisting of the department of psychology, physical therapy, occupational therapy, speech and hearing, and special education. This evaluation may take from three weeks to three months, depending upon the severity of the disability and the multiplicity of physical and neurologic involvements.

Some patients must be observed and tested over and over again to determine the level at which treatment and training can begin. After evaluation is completed the case is brought before the Classifications Committee, consisting of a representative from each Department. This committee coordinates the findings of each department and makes specific recommendations to the Medical Director in regard to treatment and training. The patient is then seen again by the Medical Director and the clinic team which consists of the entire professional staff, and at this time a program is planned and becomes effective. Once the treatment and training programs become effective, regular periods for re-examination or re-evaluation are scheduled.

The child may be seen again by the Medical Director and the Classifications Committee at from three to six months intervals. However, if a problem should arise before the time of the patient's scheduled re-evaluation, it is immediately brought to the attention of the Medical Director and the Classifications Committee. Changes in the training and treatment are generally made at the scheduled re-evaluation time, though they may take place at any time whenever the therapist or teacher sees a need and brings it to the attention of the Medical Director.

The Therapeutic Team. The ideals in the treatment of cerebral palsy can best be realized by the grouping of the interested specialists into a therapeutic team. Crothers of Boston, and Phelps of Baltimore first developed the team approach to the diagnosis and treatment of the cerebral palsied. The team consists of the representatives of the several professions necessary for the diagnosis of the cerebral palsied and in the follow-up of prescribed treatment. One qualified person should be responsible for the integration of the efforts of the members of the team into the master plan of treatment. This person, whoever he may be, should possess wide knowledge of cerebral palsy and should know how best to utilize the services of his consultants.

The basic team represents the special medical, sociopsychologic, and educational areas, and is composed of certain specialists in cerebral palsy in each of whom makes his assessment for treatment, based upon the physician's initial diagnosis.

The Social Worker. The social worker, by training and experience, and with particular knowledge of human behavior, community organization and resources, is uniquely equipped to offer help with problems in daily living, in relationships, and in understanding the process of normal growth and development. In the very nature of cerebral palsy, with its frequently multiple handicaps, there are invariably difficulties in the patient's and family's situation which require casework service.

Treatment

There is no one particular type of treatment for cerebral palsy as such. Several methods and technics are now being used, which have been evolved over the past few years. The treatment must be based on the individual needs of each child, and no attempt should be made to mold a child into a preconceived and fixed treatment program. The patient is a child first, with cerebral palsy as

a superimposed disability, and therefore has all the requirements of the normal child. These requirements should be supplemented by the specifics of cerebral palsy management and treatment adapted to his own personal needs.

Education. This must go hand in hand with treatment if the child is to develop the optimum degree of physical and emotional independence. Even if he fails to be economically independent in later life, it is still important that he should be well-adjusted, have interests of his own, and be able to care for himself as far as possible. For this purpose therapy and educational staff must work as a team. A good team will enlist the help of the parents.

Future Plans

Future plan of the *Unidad Cerebro Parálisis de Cuba* include the extension and improvement of services when the rehabilitation center is completed. The clinic will then be able to offer a great deal more in terms of both treatment and training than is possible in the present limited facilities. Future plans include a greatly expanded attack on cerebral palsy through research. Increased funds from contributions, will bring new light and knowledge from the research laboratories of our medical schools and medical centers. Plans must be made for facilities to provide whatever care is needed for cerebral palsied persons requiring custodial or residential homes.

Clinical Allergy: Past and Present*

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IN MANY BRANCHES OF MEDICINE twenty-five years is a relatively short period. In the clinical practice of allergy, however, this is a rather long period. Almost all of the major immunologic discoveries in the field of allergy have been made in the past sixty years. The discovery of house dust as an allergen and the hyposensitization treatment of pollenosis date back less than forty years. When I first became associated with the late Dr. W. W. Duke, there were few men in this country who were practicing allergy as a specialty, and almost no internists, otolaryngologists, pediatricians, or general practitioners made any effort to treat allergy. The only reference I recall in my medical school days to the subject of clinical allergy was the presentation of a single case. The patient had a chest which sounded perfectly normal and on drinking a malted milk developed an acute asthmatic attack which the professor advised us was due to malt, and which in retrospect I am now convinced was due to milk. This neglect of the subject of allergy has changed only to a degree. It is strange that with allergic diseases ranking third in prevalence among chronic diseases today, the teaching of allergy in medical schools is for the most part completely inadequate. In many medical schools the subject of allergy is entirely neglected.

It is generally accepted that the tendency to suffer from allergic disease is inherited. Everyone is, in all probability, potentially allergic, and under certain conditions of health and environment sensitivity may be acquired. Once the allergic state is established it tends to be followed by the development of other allergic diseases.

Very little has been added in the past twenty-five years as regards the etiology and diagnosis of the allergic diseases. Certainly there have been numerous new substances to which people have been found to be allergic. In the early days of the clinical treatment of allergy, persons with respiratory allergy could be placed in a category of sensitization to pollens, a few inhalants and a few commonly eaten foods. Today, of course, this is a much more complex problem. The advent of air travel makes a changing environment instead of the rather static environment that used to exist. Patients are in one locale one day and many hundreds of miles away the next and their exposures are constantly changing. The simple foods of yesterday are no longer satisfactory for our present-day needs. The ready-mixed cooking and baking foods have led to many more complex mixtures to which one may become sensitized. Modern chemistry and the development of the synthetics has opened up a new field which involves very powerful allergens. Atmospheric pollution from our constantly expanding industry is another factor in the increased amount of allergy seen today. Still, basically, the methods of testing remain about the same. I do scratch and do intradermal tests today just as I did some twenty-five years ago, and receive about as much or as little information as I did at that time. In reviewing a large number of cases, I find that the food sensitivities still show milk, egg, wheat and corn to be the most common offenders, and in the inhalant group, dust, pollens and molds are still the most frequent offenders. This too, parallels the old days.

From the standpoint of treatment there have been many contributions, but basically the antihistamines and the steroids seem to be the only worthwhile ones. Hyposensitization is still the treatment of choice and despite the differences concerning low-dosage and high-dosage injections, the method is approximately the same as it was in the early days. We are, however, still groping in the dark with regard to an understanding of what we are doing when we treat by the injection method. The theory of the "blocking antibody" is a good working hypothesis but is not the answer to the whole problem.

There has been little progress in the study of such diseases as chronic atopic dermatitis, intrinsic or infectious asthma and chronic

*Chairman's Address, read before the Section on Allergy, Southern Medical Association, Fifty-First Annual Meeting, Miami Beach, Fla., November 11-14, 1957.

urticaria. The problems connected with these illnesses are still as they were twenty-five years ago and we seem no nearer to a solution.

I am of the opinion that the scratch and intradermal food tests are of very little value. A positive skin test may be of significance but the negative skin test is meaningless. In my cases of urticaria, I avoid the skin test completely since time has proved that they are of no value. I think perhaps the best method of testing for foods is the actual removal of the suspected food or foods from the diet for a short period of time, and then the feeding of the food to the patient and reproducing his symptoms.

One of the rather new fields that has been productive of considerable information to the allergist, is that of pulmonary function tests. It is routine in many allergists' offices to have some sort of apparatus by which he can from time to time check the breathing capacity of the patients. Improvement as shown by these tests is an important aid in therapy. The machines demonstrate the increase in breathing ability and they also are of value in testing the efficiency of drug therapy.

Many drugs have been developed for the treatment of allergic diseases over the years, and new drugs will continue to appear in the future. It has always been my view that if a drug or a method of treatment is of value, it must withstand the test of time. It is most disheartening to read articles in the various journals, in which reports on new drugs indicate 90% to 95% relief of symptoms and then not only being unable to verify this, but find that within a period of one or two years that the drug has been completely discarded as worthless. This has been not only the experience with many drugs, but was the experience that followed the advent of the Warrick Machine for ionization of the mucous membranes of the nose, x-ray therapy in the treatment of asthma, Lipiodal instillation of the bronchial tree in the treatment of asthma and many other therapeutic measures. I feel that it is worthwhile to try these new drugs and new methods that will appear from time to time, but conclusions concerning their efficacy should await the test of time.

Concerning hyposensitization treatment in general, it would seem that there is a variation of sensitivity in patients. For this reason, there is no standard method that can be used in hyposensitization. I have seen patients who require exceedingly minimal dosage and receive maximum relief and by the same token, I have seen patients who require maximum dosage in order to obtain relief. Certainly there must be a variation in the requirements as to dosage in different parts of the United States. In those areas where the pollen content of the air is great, a different dosage must be required than in those areas where there is scant amounts of pollen. There must also be a marked variation in toxicity of pollen, not only with regard to locale, but also with regard to different seasons in the same locale. I have seen seasons in my community when the pollen count is low and yet the hay fever is severe. I have seen seasons with relatively high pollen counts and only moderate hay fever. This I must conclude, is probably due to the variation in toxicity of the pollen in those respective years.

In the Middle West it has always been necessary to use multiple pollen antigens in the treatment of pollen cases. Mixtures of grass pollens are necessary in order to obtain satisfactory relief and mixtures of the various ragweeds are also used in hyposensitization. In addition, in certain areas of the Middle West, various chenopods and pigweeds must be added in order to obtain optimum results.

In looking back over these years of treatment of pollen cases, I have tried to analyze the results that have been obtained. There are many factors which must be taken into consideration. The variations of the pollen content of the air in different years is a factor which must be considered. The amount of rain-fall and the amount of sunshine and the resultant toxicity of the pollen must be considered. The length of treatment the patient receives, whether it was perennial, preseasonal or co-seasonal is of importance. The patient's interpretation of relief is also a variable. One is often surprised to find patients returning for treatment, who in the previous year seemed to have complained constantly of lack of results and have on this return visit stated that in looking back, they had a very good season and were quite satisfied with their treatment.

Despite the many contributions to our therapeutic armamentarium our old stand-by epinephrine still remains as the most impor-

tant and most widely used drug. Many have forgotten that ephedrine, which may be taken orally, is an excellent drug in the treatment of allergy. The antihistamines have proved to be of some value in relief of nasal symptoms and skin allergies but by and large are of no value in the treatment of asthma. Among the untreated hay fever patients, it would seem that the use of the antihistamines over a period of years has increased the number of hay fever asthmatics.

The antibiotics are frequently of great importance in the treatment of allergies involving the respiratory tract. But I should like to offer a word of warning. I have had 2 serious immediate reactions from the injection of penicillin, and in both cases penicillin had been administered many times before without any evidence of sensitivity. It has been stated that one person in every 20 will experience a penicillin reaction varying from a urticaria to almost instantaneous death. Penicillin is used in the treatment of bovine mastitis, and, although farmers are restricted from selling milk from cows receiving penicillin until 72 hours after the last injection, almost all marketed milk contains some penicillin. For the extremely sensitive patient there is sufficient penicillin in milk to produce urticaria and other allergic disorders. At one time or another almost all of the antibiotics have been shown to be the cause of allergic reactions.

Most of you are familiar with the use of the steroids in the relief of allergic symptoms. The benefits of these preparations are transitory and in no way do they alter the underlying state of hypersensitivity or the need for specific treatment. Fortunately, the use of the steroids to control allergic symptoms may require only a maximum of a few weeks of treatment so that many of the complications are avoided. However, many physicians carry the allergic patient on long-term steroid therapy. In addition to the Cushing syndrome, a number of other complications must be watched for during long-term therapy. Hypertension can develop and the blood pressure should be recorded at frequent intervals. Edema, glycosuria and various mental symptoms are not infrequently observed. Activation of latent tuberculosis or peptic ulcer is a dangerous problem and is often worse than the disease for which the steroid was given. Osteoporosis, particularly of the vertebrae, which can lead to pathologic fractures must be watched for. An awareness of the danger of adrenal cortical atrophy is important. This is particularly dangerous when a period of stress, such as an operative procedure, is imminent. One must also remember that allergy to the steroid itself is possible. ACTH is a good antigen and sensitivity has been observed on frequent occasions. It would seem that prednisone and prednisolone possess the same anti-allergic and anti-inflammatory properties as cortisone and hydrocortisone, but that the retention of sodium and water is not as great a problem in their use. The other side-effects, however, occur as readily as they do with cortisone and hydrocortisone.

There has, in recent years, because of the so-called "miracle-drugs," been a tendency to depend on these drugs for relief of intractable and even the average allergic state, to the frequent neglect of the more sound and lasting methods of treatment. This trend toward empirical methods of treatment, particularly by those who do not practice allergy as a specialty, is a deterrent to the progress of allergy as a specialty. It is not good treatment for allergy to use methods which merely relieve symptoms and do not in themselves help to completely eliminate the disease. When indicated, these drugs are of great value. However, persistent use of such drugs without further attempt to determine etiology and to use correct management of the disease, can only lead to a chronically ill patient, dependent on drugs and with little hope for the future.

Statistical comparisons of results in treatment are difficult to interpret because of the lack of standardization of testing and treatment materials. Since the active principle is not known, an absolute standardization cannot be made. A chemical test is obviously not the answer to this problem. It has been suggested that some method of biologic assay may be the answer, but to date these methods are impractical. Methods of preparation of allergens are variable. Extracting media vary from office to office, and this makes it even more difficult to set up standards for the strength of materials for skin testing and treatment. It is hoped that at some future date uniform materials will be available to all men in the field of al-

lergy for testing and treatment. This will lead to more uniform results and better statistical evidence for comparison.

Of great importance is the prevention and the treatment of complications. This is particularly true in those allergies that affect the respiratory tract. The neglect of the asthmatic must eventually lead to the development of emphysema and the possibility of the development of cor pulmonale and all its complications. The control of intercurrent infections in the attempt to prevent the development of bronchiectasis is also of importance. The control of nasal allergy frequently prevents the ultimate development of bronchial asthma.

The status of the so-called migraine headache has changed little over the years. One finds few cases in which a specific etiologic agent is proven. It has been the experience that the best relief is obtained by the use of various ergot preparations, particularly ergotamine tartrate in either its oral or injectable form. Observation of patients having migraine over many years and who have been receiving injections of ergotamine tartrate, leads one to believe that the frequency of the headache is definitely increased by this form of treatment. The headaches usually become cyclic and frequently on a 24 hour basis, which is approximately the time that the ergotamine effect is present. The injection must then be repeated. This observation has also been substantiated by other investigators.

We are today in a period when the psychiatric approach to disease has caught the fancy of the profession in general, and to a certain extent it also has an appeal for the patient himself. The trend seems to be for an increase in nervous disorders, and it is not difficult to assume that there is some relationship between disease and one's nervous instability. In good practice of treatment of any disease, the psychic factors that may disturb the patient and may therefore aggravate his physical condition must be borne in mind. Every patient is reacting emotionally all the time, not only to his illness but also to other factors in his daily life. It is my opinion that every practitioner of medicine, if he is sincere and interested in his patient, must practice some psychotherapy. This is inherent in the patient-doctor relationship. It has been described as "unpremeditated, intuitive psychotherapy." It consists of advice and suggestions, reassurance and supportive therapy which are part of general therapy.

The allergic individual may frequently precipitate attacks of his particular form of allergy by an emotional upset. The old explanation of a highly sensitive nervous system and a "trigger" mechanism is still as good as any. I am convinced that the normal type of individual does not precipitate an allergic attack by an emotional upset. In other words, it requires a previous sensitization and definite allergy before the emotional upset can bring on symptoms of allergy. Observation will bear out the fact that the patient who is subject to anginal attacks will not develop urticaria, nor asthma as a result of an emotional upset, but rather an attack of angina. Similarly, the patient with a peptic ulcer, when emotionally upset, will not develop urticaria, nor asthma nor a migraine headache but will develop his ulcer pain.

I am somewhat fearful of the present trend toward the psychiatric approach in allergy and particularly to the method of treatment in which psychoanalysis is utilized. It would seem that the immunologic approach to the treatment of this disease is forgotten. It is probably easier and more lucrative to spend hours in interview than in testing and treating by injection and medications. I say more lucrative because there recently was published an article by one of the so-called psychoanalytic allergists, who stated that in order to obtain good results in the treatment of asthma at least 400 hours of interview are necessary. At the current rate of psychoanalytic sessions, it would seem that the amount paid to the analyst by an asthma patient is far in excess of what the average allergist receives. The analyst points to those cases which are failures in treatment by our present methods as the classical example of those that would do well in the psychoanalytic approach. I would rather think that these failures are mere evidence of the inadequacy of our knowledge of the correct immunologic approach to their allergy.

Many of you recall the old days when undiagnosed cases were all thrown into the category of neurosis. Today, we are seeing less and less of such a diagnosis. There are, of course, patients who have an allergy and who also present psychiatric problems, and who are perhaps candidates for some form of psychiatric therapy. In general, however,

my experience, particularly in the treatment of allergic children, has been that many of the manifestations of emotional disturbance and heightened irritability disappear as the symptoms of the allergy are controlled by routine allergy treatment and not by any approach toward the psyche. It would seem that these behavior problems are secondary to the stress and strain brought on by the allergic attack and are not primary behavior problems. If the allergy is controlled the chances of the development of behavior problems are greatly diminished. The specific emotional pattern in asthmatic children is a matter of disagreement even among the psychiatrists themselves. In studies done by allergists on large groups of children in elementary schools, it has been found that the behavior pattern of the asthmatic child is no different than that without asthma and that there was no specific discernible pattern. Much has been written concerning the psychiatric aspects and management of allergy, but one is forced to conclude that psychiatry has done little in the way of relief of the symptoms of allergy.

Papers written concerning the psychomatic approach are characterized by such phrases as, "maternal rejection," "hostility," "affect hunger," "blocking of hostile feelings" and many others. There is usually an attempt to correlate some sexual pattern to the symptoms of allergy. Statistics quoted are rarely of value since there are no control studies, and many of these statistics are out of proportion to what one would anticipate by experience. For example, in a recent book, one reads that "97% of allergic children have been living in an emotional climate where maternal rejection prevails;" "of 119 mothers with attitudes of rejection, 87 told of sexual maladjustment." Figures such as these are seldom found in clinical studies.

The allergist cannot help but be embarrassed when newspapers carry stories such as the one recently released concerning the presentation of a so-called "allergist," who blames ankle rashes on bad thoughts; rashes of the external ear on the fear that something may be heard which will cause anguish, shame or embarrassment; rashes on the lips as being caused by a feeling of guilt at wanting to kiss; rashes on the eyelids resulting from fear of seeing something which is intolerable to the individual; rashes on the palms indicating money problems; and rashes beneath the wedding ring to be due to marital difficulties. This type of thinking and publicity leads to ridicule of the field of allergy, both by the profession and by the laity. Such a presentation is obviously only made for the publicity that it will attract. It is unfortunate that we do not have some system whereby all "medical science" releases are carefully screened so that only those of a true scientific nature are presented to the public. It has been said that the less one knows of any aspect of medicine, the more likely one is to believe that it is all psychomatic.

The relationship of allergy and collagen diseases paints a fascinating picture for future study. It would seem thus far that hypersensitivity is the only clue to the etiology of these conditions. The collagen diseases are of great clinical importance since there seems to be an ever-increasing incidence and the prognosis is usually serious. These diseases include serum disease, periarteritis nodosa, systemic lupus erythematosus, acute rheumatic fever, rheumatoid arthritis, scleroderma, dermatomyositis and thrombocytopenic purpura. All of these diseases have many pathologic and clinical similarities. There is a definite relationship between bronchial asthma and periarteritis nodosa. There is also a close relationship between serum disease and periarteritis nodosa. Many of the collagen diseases may be due to sensitivity to drugs. The diseases of collagen usually respond to steroid therapy. Thus one can see that future studies of the allergic diseases must include the diseases of collagen.

The organization of the Allergy Foundation of America, through the joint efforts and support of the American College of Allergists and the American Academy of Allergy, will accomplish a great deal for the future of allergy. It is a progressive foundation, dedicated to Research, Medical Training and Public Education. The designation of the National Institute of Allergy and Infectious Diseases by the Federal Government within the framework of the National Institute of Health, will help greatly in the study of allergic diseases.

There is much to be learned in the field of allergy. We have scarcely scratched the surface in this most important branch of medicine. It is a challenge that I hope will be accepted by many young men.

Medihaler in Asthma: A Double Blind Study*

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This study provides objective evidence of the efficacy of the inhalation of bronchodilating medicaments.

ANY MEASURE WHICH PROVIDES prompt relief with minimal side action is a welcome event to the wheezing, dyspneic, asthmatic patient. Epinephrine, its isomers and related compounds have been used for this purpose for many years. We report here an evaluation of the benefits derived by asthmatics from the use of aerosols of epinephrine and of isoproterenol hydrochlorides, based upon a controlled study.

Method

A double blind study was conducted upon 40 asthmatic patients using a Medihaler-Placebo, Medihaler-Iso (isoproterenol HCL) and Medihaler-Epi (epinephrine HCL).** The identity of the material in aerosolization was not known to either investigators or patients. Each inhalation of isoproterenol contained 0.06 mg. of base, while that of epinephrine contained 0.125 mg. Care was taken to instruct the patients how to use the Medihaler properly.

Ambulatory patients with mild to moderate wheezing were selected from private practice. After the patient had rested 30 minutes the one-half second timed vital capacity was measured with a Collins Vitalometer. According to Miller,[1] this provides a convenient method of evaluating pulmonary ventilatory function with a single breath test. Using the same machine and a stop watch, the respiratory index (R.I.) as reported by Simon,[2] was determined:

$$\text{R.I.} = \frac{\text{Vital capacity (ml)}}{100} + \text{breath holding time (seconds)}$$

Four inhalations from the Medihaler were then taken and the measurements were made again 15 and 30 minutes thereafter. The acceptance of the medication by the patient was determined after the patient had used a given preparation for one week as needed.

Results

Of the 40 patients studied, all had definite relief from wheezing after breathing Medihaler-Epi and Iso, and only minimal or no benefit from Medihaler-Placebo. In no case was the placebo preparation preferred. Acceptance by the patient correlated well with relief from dyspnea and improvement in pulmonary function studies. It was soon noted that even a slight increase of only 300 to 500 cc. in the total vital capacity was accompanied by subjective relief and disappearance of rales as determined by auscultation. Apparently there is a definite critical point at which further decrease in vital capacity is correlated with the appearance of symptoms.

The data obtained in pulmonary function studies in 10 patients, typical of all 40, are given in table 1. Table 2 gives the averages of the values measured in all 40 patients. No side effects were noted. The lack of side effects with Medihaler-Iso and Medihaler-Epi in those patients in whom the subcutaneous dose of required epinephrine caused considerable nervousness and palpitation was remarkable. Evidently, the therapeutic amount of epinephrine placed on the shock organ by the aerosol was efficacious without causing generalized stimulation.

Discussion

Our results are in agreement with those of Freedman[3] who, in a previous study on patients with bronchial asthma, found treatment with the Medihaler preparations to be superior to that with ordinary aerosols. Several observations seem worthy of comment. Even young patients, ranging from 3½ to 6 years of

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**Kindly supplied by Riker Laboratories, Inc., Los Angeles, Calif.

TABLE 1

EFFECTS OF THE USE OF MEDIHALER IN ASTHMA

Patient	Preparation*	Age (Yrs.)	Type Asthma	Respiratory Index			One-Half Sec. Vital Capacity (cc.)			Patient's Evaluation
				Before Therapy	15 Min. After Therapy	30 Min. After Therapy	Before Therapy	15 Min. After Therapy	30 Min. After Therapy	
BN	Iso	16	Allergic	34	44	47	1000	1500	1700	Good
	Plac			32	31	32	700	600	700	Poor
	Epi			32	39	42	600	1100	1100	Good
SD	Iso	11	Allergic	36	48	50	700	1000	1100	Good
	Plac			36	37	36	800	800	700	Poor
	Epi			36	42	53	900	1000	1100	Good
SH	Iso	24	Allergic	81	117	118	1300	1800	1700	Good
	Plac			56	55	55	1000	1000	1000	Poor
	Epi			60	84	79	900	1000	1200	Good
WT	Iso	51	Allergic	55	80	90	1100	1500	1600	Good
	Plac			55	54	54	1100	1100	1100	Poor
	Epi			75	91	91	1000	1300	1400	Good
SY	Iso	8	Infectious	43	55	56	500	600	600	Good
	Plac			23	24	22	500	500	500	Poor
	Epi			23	28	32	500	500	700	Good
WN	Iso	7	Infectious	21	28	33	300	500	500	Good
	Plac			20	18	19	400	300	400	Poor
	Epi			18	22	27	400	500	500	Good
LP	Iso	10	Infectious	36	47	59	1100	1200	1300	Good
	Plac			36	39	35	1000	900	900	Poor
	Epi			28	41	41	600	800	800	Good
NS	Iso	7	Mixed	32	39	43	700	800	800	Good
	Plac			30	31	28	800	700	800	Poor
	Epi			35	48	46	500	700	800	Good
DN	Iso	9	Mixed	71	78	85	1000	1300	1300	Good
	Plac			51	54	51	700	700	700	Poor
	Epi			63	64	64	700	800	800	Good
KY	Iso	5	Mixed	23	42	43	600	800	800	Good
	Plac			24	23	25	500	400	500	Poor
	Epi			27	38	41	400	600	700	Good

*Medihaler-Iso, Medihaler-Placebo, Medihaler-Epi.

age, could be trained easily to use the Medihaler properly and showed no side effects. Some of these were so small the pulmonary function studies with the Vitalometer could not be obtained. Older patients with intrinsic asthma had the poorest therapeutic results. These usually required an excessive number of inhalations and relief was of short duration.

The speed of onset of relief is noteworthy. In table 1 it is seen that most of the increase in *respiratory index* and in one-half second vital capacity was obtained within 15 minutes. Actually most of the patients had definite relief within 5 minutes, sooner than would have been expected from a subcutaneous injection. The patients awakening at night with coughing and wheezing reported taking a few inhalations from the Medihaler and then being comfortable and able to sleep for the rest of the night.

The Medihaler is so constructed that it delivers a fixed dosage which is independent of the patient's strength or duration of the depression of the valve. Because there is very little time lag between depression of the valve

TABLE 2

AVERAGE OF PULMONARY FUNCTION IN 40 PATIENTS

Preparation*	Respiratory Index			One-half Second Vital Capacity		
	Before Therapy	15 Min. After Therapy	30 Min. After Therapy	Before Therapy	15 Min. After Therapy	30 Min. After Therapy
Iso	44	57	62	945	1200	1272
Placebo	47	47	47	980	967	960
Epi	47	56	61	915	1103	1170

*Medihaler-Iso, Medihaler-Placebo, Medihaler-Epi.

TABLE 3

PULMONARY FUNCTION STUDIES IN A 6 YEAR OLD PATIENT

Aerosol Preparation	Respiratory Index			One-half Second Vital Capacity			Patient's Evaluation
	Before Therapy	15 Min. After Therapy	30 Min. After Therapy	Before Therapy	15 Min. After Therapy	30 Min. After Therapy	
Iso	32	37	38	400	500	600	Good
Placebo	28	24	26	400	400	400	Poor
Epi	29	37	40	400	700	800	Good

and the delivery of medication, treatment is simplified. The patient quickly learns to start to inhale just before he presses the vial between thumb and forefinger.

Summary

Medihaler-Iso and Medihaler-Epi, aerosol preparations of isoproterenol and epinephrine hydrochlorides, were used to treat 40 asthmatic patients in a double blind controlled study. Each patient was treated as his own control with Medihaler-Placebo. Both Medihaler-Iso and Medihaler-Epi were found to be effective in rapidly relieving wheezing and dyspnea. The preparations were especially helpful in the treatment of children because of the ease of self-administration (Table 3). Improvement in pulmonary function measurements correlated well with estimates of efficacy based upon clinical findings.

Addendum

Since completion of this study, Medihaler preparations have been modified slightly by Riker Laboratories. The newer preparations deliver with one depression of the valve a does of 0.125 mg. of epinephrine as the bitartrate or 0.06 mg. of isoproterenol as the sulfate. We have found the new preparations to be even more satisfactory than the old because alcohol which causes drying of the mucous membranes and which was contained in the older preparation is not contained in the new.

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The Apparent Superiority of Tolbutamide Over Insulin in the Regulation of Selected Clinic Patients*

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THE CLINICAL TRIALS of the past two years[1-6] indicate that tolbutamide,† provides a safe, simple, and effective means of controlling hyperglycemia and glycosuria in the majority of stable diabetics. However, little or no information is available to indicate, in quantitative terms, the quality of control attainable with oral therapy, and, more importantly, to permit comparison of oral diabetic management with prior insulin regulation. This report will attempt to provide such information and will, in addition, relate problems and experiences encountered in the first 8 months‡ of tolbutamide therapy in a charity diabetic clinic.

The present report will consider only those 100 subjects who were changed to the drug as outpatients in the Parkland Memorial Hospital Metabolic Clinic from 20 to 24 months ago. Many of these individuals presented the problems common among the indigent diabetic population. These include poor cooperation and reliability, language barriers, illiteracy, recalcitrance in following dietary regulations, blindness, and other physical disabilities. This group, difficult to regulate in the past, was considered, therefore, a most stringent challenge to any form of therapy.

Selection of Patients

Since patient follow-up was limited to weekly visits, the hazards of insulin replacement in an inadvertently selected labile diabetic were considerable. An effort was made, therefore, to exclude persons with the labile form of the disease. Selection of patients was based on clinical criteria known to correlate with responsiveness to sulfonylurea.[1-6] All diabetics whose records suggested that previous withdrawal of exogenous insulin had not resulted in keto-acidosis were considered acceptable. In the absence of such evidence of stability, the following criteria for selection were, with few exceptions, applied: (1) no past history of keto-acidosis; (2) onset of diabetes at 40 years of age or older; (3) a previous insulin dose of never more than 45 units per day; and (4) a fasting blood sugar level never above 350 mg. per 100 cc.

Of the patients thus selected most had not been ideally controlled on insulin. The mean fasting blood sugar values of the 96 patients treated with insulin averaged 192 mg. during the year preceding conversion to tolbutamide. The lowest mean fasting blood sugar in the group was 120 and the highest was 320 mg. per 100 cc. The mean fasting blood sugar level had been above 175 mg. in 55% of the group and above 200 mg. in 35 per cent. The mean insulin dosage for the group had been 23 units, with a range of from 5 to 50 units per day.

Method of Conversion

All subjects were instructed to discontinue the administration of insulin promptly and to substitute 3 Gm. of tolbutamide each night at bedtime. (A program of gradual withdrawal from insulin was considered too complex and, therefore, impractical for this group.) A supply of insulin was provided for use in the event of obvious deterioration in control. Patients were carefully instructed regarding the manifestations of such deterioration and were asked to communicate with the clinic physicians or to resume insulin therapy

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†Orinase, Upjohn Company, Kalamazoo, Mich., supplied through the courtesy of Dr. C. J. O'Donovan.

‡Although the 17 months that have passed since the preparation of these data have altered the statistical results to a certain degree, this report is concerned primarily with the early months of sulfonylurea therapy, the period of conversion from insulin and of adjustment of maintenance dose.

if these signs appeared. Weekly clinic visits were scheduled for at least the first 3 weeks of treatment, after which intervals between visits varied from 1 to 8 weeks, according to need. Fasting blood sugar determinations by the Folin-Wu technic[7] immediately preceded each visit. Records of home urine tests were examined at each visit. Diet prescriptions were not altered from those previously in effect.

The dose of tolbutamide during the first week was 3 Gm. daily in all cases. If the fasting blood sugar level declined, the dose was reduced on subsequent visits to the minimal dose capable of maintaining optimal control of fasting blood sugar.

Results

Of the 100 clinic patients, 96 of whom had been taking from 5 to 50 units of insulin, 72 were still receiving tolbutamide 4 to 7 months after conversion from insulin therapy. Eight patients had been lost to follow-up, while 20 had, for a variety of reasons, been placed back on insulin management (Table 1).

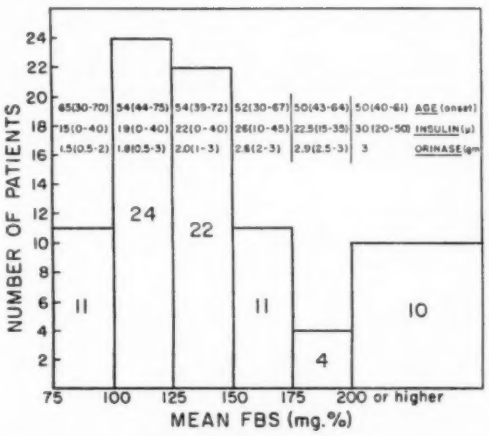
(1) *Control of fasting blood sugar with tolbutamide therapy.* In these 72 patients fair to excellent control of fasting blood sugar and glycosuria has been maintained. In 11 subjects (15%) mean fasting blood sugar values have ranged between 85 and 100 mg.; in 24 (33%) between 101 and 125 mg.; in 22 (33%) between 126 and 150 mg.; in 11 (15%) between 151 and 175 mg.; and in 4 (6%) between 176 and 200 mg. per 100 cc. Fasting normoglycemia was achieved in 34 cases, 47% of this group. In 57 subjects, 78% of this group, the mean fasting blood sugar has been maintained below 150 mg. per 100 cc. The frequency distribution of the mean fasting blood sugar of the 100 patients while receiving tolbutamide is indicated in figure 1, along with other pertinent data. (The 10 individuals whose mean fasting blood sugar was above 200 mg. were classified as failures and placed back on insulin.)

In accordance with the observations of Mirsky, Diengott and Dolger,[8] the mean age of onset of diabetes appeared to vary inversely with the degree of control of the blood sugar; the group with the lowest fasting blood sugar while on tolbutamide had the highest mean age of onset, and the group with the highest mean fasting blood sugar had the lowest mean age of onset (Fig. 1). However, in each category the individual ages of onset ranged widely.

TABLE 1

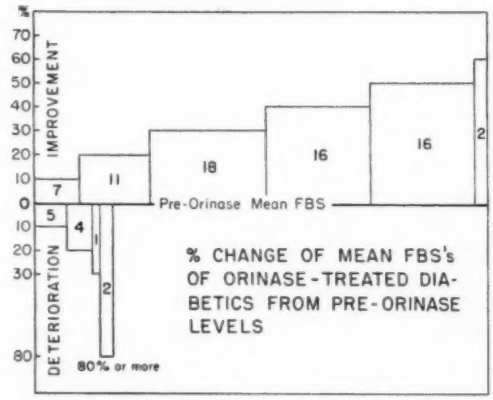
Total series	100
Still on tolbutamide	72
Failures	20
Lost to follow-up	8

FIG. 1



The frequency distribution of the mean fasting blood sugar of 82 subjects receiving tolbutamide for more than 3 months. The ranges of mean fasting blood sugar levels are indicated on the horizontal axis. The number of patients in each range of control is expressed on the vertical axis and by the numbers in each column. The mean age of onset, mean prior insulin dose, and mean tolbutamide dose of patients in each category of blood sugar control are also indicated.

FIG. 2



Control of fasting blood sugar in patients treated with tolbutamide is compared with their prior regulation of F.B.S. with insulin. The mean fasting blood sugar level of all subjects while on insulin is represented by the heavy line at zero. The per cent of improvement or deterioration is expressed on the vertical axis above and below this line. The figure within each column shows the number of patients who experienced the percentage of improvement or of deterioration indicated by the height or depth of each column.

Similarly, the magnitude of the previous insulin dose appeared to vary directly with the mean fasting blood sugar level obtained with tolbutamide. Those groups most effectively controlled with tolbutamide had received the lowest average dosages of insulin. Again wide individual variations were noted in each category.

(2) *Comparative effectiveness of tolbutamide and insulin control.* In figure 2 the mean fasting blood sugar values of patients on tolbutamide are compared with the previous mean fasting blood sugar levels while on insulin, and the degree of improvement or deterioration while receiving the newer agent is quantitated. In the majority of these subjects, control of fasting blood sugar with tolbutamide has been superior to that achieved with insulin. In 7 patients (9%) the mean fasting blood sugar values during tolbutamide therapy have been from 0 to 10% lower than during insulin treatment; in 11 (13%) they have been from 10 to 20% less; in 18 (22%) from 20 to 30% less; in 16 (20%) from 30 to 40% lower; in 16 (20%) from 40 to 50% lower and in 2 (2%) they have been from 50 to 60% lower. The dosages required to effect optimal control in this group have ranged from 0.5 to 3 Gm. daily with an average dose of 1.9 Gm.

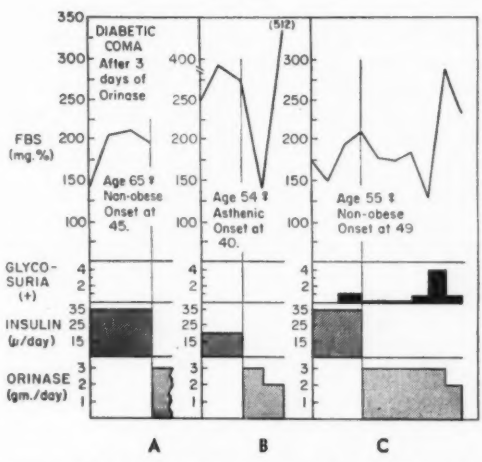
(3) *Unsuccessfully managed cases.* Twenty-seven diabetics included in this study are, for a variety of reasons (Table 1), no longer receiving tolbutamide. Of the 20 patients who were classified as "failures" in table 1, 4 had been reconverted to insulin therapy, despite excellent therapeutic responses to tolbutamide, only because they preferred parenteral to oral therapy (Table 2). In 2 instances tolbutamide had been discontinued because of urticaria, which was the only toxic manifestation encountered in this series. In 14 cases insulin therapy was reinstated because of persistent fasting hyperglycemia in excess of 200 mg. despite large doses of tolbutamide. Nine

TABLE 2

FAILURE GROUP

Deterioration on tolbutamide (diabetic coma 1)	5
F.B.S. consistently 200 mg. or higher	9
Patient prefers insulin despite good response	4
Toxicity (rash 2)	2
Total	20

FIG. 3



(A) A 65 year old Negress in whom 35 units of N.P.H. insulin were abruptly replaced by 3 Gm. of tolbutamide. Three days later she was hospitalized in diabetic coma. After her recovery she admitted having required high doses of insulin many years before. (B), (C) Two cases illustrating deterioration in control of blood sugar following apparent initial response to tolbutamide.

of these individuals were in no worse control on tolbutamide than they had been while on insulin. In the other 5, however, apparent deterioration in control of diabetes followed the substitution of tolbutamide for insulin; this includes the case of diabetic coma (Fig. 3, A). In 2 patients, deterioration was delayed for 2 weeks and followed an apparent favorable response to the sulfonylurea (Fig. 3, B and C).

Discussion

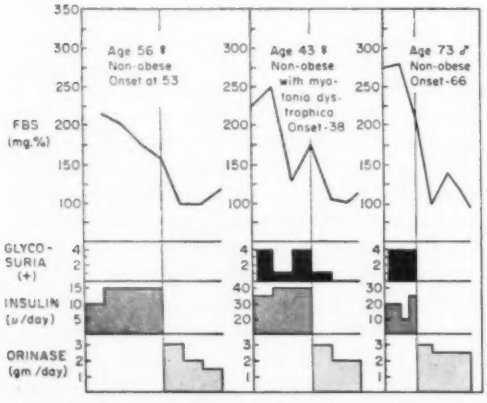
(1) *Rationale.* The recent accumulation of evidence favoring a "betacytotropic" mechanism of action for the sulfonylurea drugs[9-11] has dispelled much of the fear that tolbutamide therapy might be an unphysiologic means of controlling blood sugar level. It appears that the drug operates primarily by enhancing the release of insulin from the pancreas. This information is reassuring to the clinician since it provides a rational basis for the use of tolbutamide in responsive diabetics. In fact, enhancement of endogenous insulinogenesis is in many respects a more attractive therapeutic approach in such diabetics than is substitution with foreign insulin.

(2) *Analysis of successfully regulated cases.* Seventy-three per cent of the patients selected for conversion to tolbutamide therapy have

been successfully controlled on this drug for as long as 7 months. Of importance is the excellent degree of control of fasting blood sugar obtained in the majority of these subjects, most of whom had been regarded as unsatisfactorily controlled with insulin (Fig. 4). While on insulin their mean fasting blood sugar had averaged 186 mg. and in approximately one-third had exceeded 200 mg. per 100 cc. In only 18% of these patients had the mean fasting blood sugar averaged below 150 mg. Yet without any conscious change in therapy other than replacement of insulin with tolbutamide, fasting normoglycemia was easily maintained for periods of up to 7 months in 47% of this group, and in 78% fasting blood sugar values averaged below 150 mg. per 100 cc. (Fig. 1).

This apparent superiority of control by tolbutamide in these subjects must, however, be scrutinized critically in the light of differences which prevailed under each regimen. Regulation by insulin had been conducted in a more perfunctory manner by a changing personnel. Closer supervision of patients during the early months of tolbutamide therapy may have contributed to the results obtained. Single or double blind technic were not employed, so that psychologic factors cannot be excluded. Although no conscious change in diet was made in any case, it is possible that certain patients, gratified by their liberation from parenteral therapy, may have spontaneously become more conscientious in respect to diet. Weight loss was, as always, encouraged, but significant reduction of weight was achieved in only 4 subjects and could not have played an important role in these results. Although failure to control these variables may weaken the force of the inferences that might otherwise be drawn from this data, it is doubtful that these were the determining factors in effecting such remarkable improvement in control of the blood sugar. It is noteworthy that after responsiveness to tolbutamide had been clearly established, all patients were returned to routine clinic management without perceptible qualitative change in control. Furthermore, several obese patients whose course had been closely followed while on insulin because of poor control and obvious hyposensitivity to relatively large doses of the hormone, exhibited prompt and dramatic response to tolbutamide. There is, therefore, little question in our minds that the apparent superiority of regulation by tolbutamide is genuine in at least some cases.

FIG. 4



Three cases demonstrating excellent response to tolbutamide within the first week of tolbutamide therapy.

The apparently greater effectiveness of tolbutamide may be the result of one or more of the many differences which exist between exogenous and endogenous insulin. For example, the possibility exists that insulin-binding globulins which appear during therapy,[12,13] do not bind endogenous insulin, or that withdrawal of exogenous insulin reduces their titer.

Despite the fact that fasting normoglycemia was maintained on tolbutamide therapy for periods of up to 7 months in 47% of the successfully controlled patients, serious hypoglycemic reactions were not encountered in this study. Such reactions have, however, been observed in two hospitalized patients not included in this series. Liver disease was present in one. The danger of hypoglycemia is maximal in the transition period when insulin is first replaced by tolbutamide, particularly when insulin is withdrawn gradually and tolbutamide therapy given concomitantly. However, there is little question that normalization of fasting blood sugar during the maintenance phase can be set as the aim of tolbutamide therapy with far less danger of critical hypoglycemia than may be expected with insulin. Delay of a meal or unusual exercise, common causes of hypoglycemia among insulin-treated diabetics, do not present a comparable risk to patients receiving tolbutamide. It may be that stimulation of output of endogenous insulin by tolbutamide provides a more physiologic correlation be-

TABLE 3

RECOMMENDED CRITERIA FOR SELECTION OF PATIENTS FOR CONVERSION FROM INSULIN TO TOLBUTAMIDE THERAPY WHEN GRADUAL INSULIN WITHDRAWAL AND CLOSE SUPERVISION ARE NOT FEASIBLE

1. No history of *keto-acidosis.*
2. Onset of diabetes after 40 years of age.
3. F.B.S. always under 350 mg. per 100 cc.
4. Never more than 45 units of insulin.

tween insulin demand and need than does the subcutaneous deposition of slowly absorbed exogenous insulin. There is, in addition, evidence that the initial circulation of insulin through the liver is of importance in determining its distribution and its metabolic effects.[14,15] The relative hepatic uptake of insulin resulting from its normal transhepatic route may be equalled by peripheral administration of the hormone.[14]

(3) *Technic of tolbutamide therapy; conversion and maintenance.* The period of conversion from insulin to tolbutamide therapy is the time of maximal hazard to the patient. This danger is the result of withdrawal of insulin in a patient dependent on exogenous insulin. The promiscuous substitution of tolbutamide for insulin can precipitate diabetic acidosis, unless certain precautions are scrupulously observed. Daily observation of patients during the conversion phase will permit early detection of cases requiring prompt reinstitution of insulin therapy. Gradual withdrawal of insulin, as recommended by Dolger,[16] will reduce the risk of diabetic coma.

In the present study neither of the above precautions could be taken. Communication with patients was, for practical purposes, limited to weekly clinic visits. The regimen of gradual withdrawal of insulin was found to be too complex for most patients in this group. Since insulin was to be abruptly discontinued, an attempt was made to exclude patients having labile diabetes and thereby minimize the incidence of ketosis through the application of conservative criteria for selection of patients (Table 3)*. Furthermore, patients were alerted to symptoms of deterioration, such as obligatory nocturia, polyuria, and persistent glycosuria, and advised to resume insulin therapy and to communicate with the clinic physician if these appeared. When gradual withdrawal of insulin and close supervision of the patient are feasible, thereby minimizing the danger of ketosis, more liberal criteria for selection of patients are permissible. In addition, any stabilized diabetics not receiving insulin are, of course, safe candidates for tolbutamide therapy.

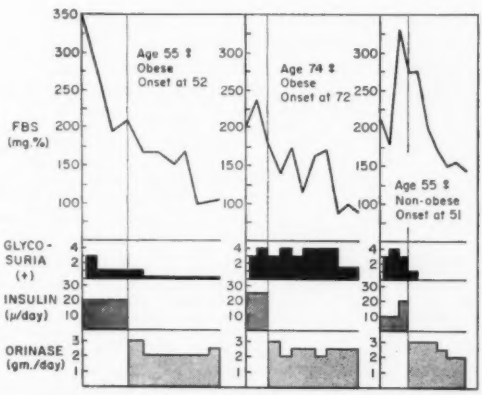
In general, a salutary response in blood sugar to tolbutamide is apparent within the first week or two. In occasional patients, however, optimal control may be delayed for 3 to 6 weeks (Fig. 5).

Similarly, deterioration may not always occur in the first week after insulin withdrawal. In two cases, apparent response to tolbutamide preceded deterioration which in one patient was delayed for 4 weeks (Fig. 3, C). Thus an apparent early response, even of rather spectacular proportions (Fig. 3, B), does not always preclude the possibility of failure.

The maintenance phase begins when the patient is receiving the smallest dose of tolbutamide capable of effecting optimal control of fasting blood sugar. Management is simple at this point since control of blood sugar is usually smooth. In general, patients with fasting blood sugar level below 150 mg. have been observed at intervals of 2 months, while all others are seen at montly intervals or more frequently if warranted. Rarely, minor adjustments in dose are found necessary. Tolbutamide has greatly simplified the clinic management of these patients.

The possibility exists that prolonged stimu-

FIG. 5



Three patients in whom F.B.S. response to tolbutamide was incomplete for the first 2 months of therapy, demonstrating that maximal response to the drug may on occasion be delayed.

*Tolbutamide response tests have not been reliable in predicting therapeutic responsiveness,[17] although Williams had found a 90% correlation between positive tests and clinical response.[18]

lation of the beta cells by tolbutamide will lead to their exhaustion.[19] This would be characterized, presumably, by a loss of responsiveness to tolbutamide and deterioration of the diabetic state. We have not encountered such a subject nor, to our knowledge, has this been documented in the literature. However, diminished responsiveness has apparently been noted in some patients after 5 or 6 months of therapy.[19]

Severe stress induced by surgical procedures or infection will increase the insulin needs of the diabetic patient and can lead to ketoacidosis. This, of course, is a problem in the management of diabetes which exists under all therapeutic regimens. Patients should be alerted to the possible consequences of serious stress, and insulin can be added if needed. This problem has not as yet been encountered in our group. The minor stresses which befell our patients included several moderately severe upper respiratory infections, chronic osteomyelitis of a toe, and two minor surgical procedures. All these events were tolerated without important disturbance in control of blood sugar and without any change in therapy.

(4) *Dosage and toxicity.* The regimen employed in this series differs from the one usually recommended which is 3 Gm. on the first day, 2 Gm. on the second day, 1 Gm. on the third day, with maintenance doses of 1 Gm. or less thereafter.[18] Daily reduction in dose was deemed too complex for most of these patients so each dose was maintained throughout the week, and weekly changes carefully explained to the patient. All patients in this series received 3 Gm. through the first week as a single dose taken at bedtime. If a satisfactory blood sugar response was obtained the dose was reduced to 2 Gm. daily for the second week, and further reductions were made each week according to the response in blood sugar. The final maintenance dose in each case represented the lowest dose capable of providing optimal control of fasting blood sugar and glycosuria. The average maintenance dose of tolbutamide in this series was 1.9 Gm. per day, somewhat greater than that employed by others. In only a few persons could optimal control of fasting blood sugar be maintained with doses of 1 Gm. or less. At first those who failed to respond to doses of 3 Gm. daily were given as much as 6 Gm. per day. Those patients, with very few exceptions, were ultimately returned to insulin therapy because of persistent fasting hyperglycemia in excess of 200 mg. per 100 cc. Doses of more than 3 Gm. are no longer employed.

These maintenance doses far exceed those employed by other authors[1-6,17] and are not recommended for routine use, since smaller doses are usually effective. In this particularly difficult group the necessity of larger maintenance doses of tolbutamide may be attributed to many factors, particularly poor cooperation in respect to diet. It should be pointed out again that, despite these high dosage levels, symptomatic hypoglycemia was not encountered and that toxic reactions were limited to 2 instances of urticaria.

The final maintenance dose should represent the minimal amount of the drug capable of effecting the desired blood sugar control in that individual. Since wide variations have been observed from patient to patient, the dose must be determined individually on a trial and error basis. A single daily dose of tolbutamide taken at bedtime has proven to be both effective and convenient.

(5) *Specific indications for tolbutamide*

TABLE 4

COMPARISON OF INSULIN AND TOLBUTAMIDE IN THE REGULATION OF TOLBUTAMIDE-RESPONSIVE STABLE DIABETICS

	Tolbutamide	*Insulin*
Rationale	?Increases endogenous insulin output	Substitution
Ease of administration	Single daily oral dose	Parenteral route
Quality of control of hyperglycemia and glycosuria	Excellent (effective and smooth) in most responsive patients. Fasting normoglycemia is attainable in some	Poor control not uncommon. Hyposensitivity to exogenous insulin in some.
Risk of serious hypoglycemia	Much less than with insulin	Considerable
Untoward toxic or allergic reactions	1 to 2%	Very rare
Effect on beta-cells	Exhaustion after prolonged use is possible though unreported	?"rests" the beta-cells
Effect on formation of insulin-binding globulins	Probably none	Great

therapy. Any stable, potentially responsive diabetic who, despite an appropriate diet, exhibits significant fasting hyperglycemia, deserves a trial of tolbutamide therapy. Conversion from insulin to tolbutamide is usually motivated by the desire to spare the patient the discomforts of parenteral therapy. However, there are certain situations when tolbutamide is preferable to insulin for reasons other than its greater ease and comfort of administration. Conversion of stable diabetics to tolbutamide is indicated if insulin reactions have been a problem, particularly in the arteriosclerotic age group. The discovery that a delay in a meal or the performance of unusual exercise will no longer result in severe hypoglycemia is extremely gratifying to such individuals. Secondly, it is our impression that in certain poorly controlled diabetics who appear to be hyposensitive to exogenous insulin tolbutamide may provide more effective control. Finally, in the rare case of insulin allergy in a stable diabetic, tolbutamide should be tried (Table 4).

In obese diabetics weight reduction is, of course, a very important therapeutic objective. If, despite the restrictive diet, significant hyperglycemia and glycosuria persist, tolbutamide can be given, but should not be allowed to impede or replace the program of weight reduction. The threat of reinstitution of insulin can be used as a spur to more conscientious observation of the prescribed diet.

Summary and Conclusions

Under the difficult conditions which prevail in the charity diabetes clinic, tolbutamide therapy was instituted in 100 selected patients, 96 of whom had been receiving insulin. Seventy-two of these subjects have been successfully controlled with the drug for periods of from 4 to 7 months. Seventy-eight per cent of these have had mean fasting blood sugar levels of 150 mg. or less, and 47% have averaged below 125 mg. per 100 cc., a record of smooth and effective control surpassing by a wide margin that of prior insulin regulation in these same subjects. The apparent superiority of tolbutamide therapy over insulin in certain diabetics is critically analyzed, in view of certain uncontrolled variables in the two therapeutic regimens being compared. It is concluded that, in at least some diabetics, the apparently greater effectiveness of oral therapy is genuine. Possible explanations for this superiority are considered. Other advantages of tolbutamide therapy, aside from its increased ease of administration, are discussed, particularly the greater freedom from serious hypoglycemic reactions than could be anticipated among similarly well-controlled diabetics receiving insulin. In this series toxic reactions to tolbutamide were confined to 2 cases of urticaria.

The major hazard of tolbutamide therapy is diabetic acidosis resulting from the termination of insulin therapy in patients dependent upon exogenous insulin. This danger can be minimized by daily observation of patients during the conversion period or by a program of gradual insulin withdrawal as recommended by others. In the present study neither of these precautions was feasible and, instead, stringent criteria for the selection of patients for tolbutamide therapy were employed in an effort to exclude unstabilized diabetics. These criteria are recommended for use under comparable circumstances. The mechanics of conversion to, and maintenance on the drug are discussed and the indications and contraindications for its use are cited. Tolbutamide has thus far proved to be an effective therapeutic agent which has simplified the management of clinic diabetics.

Acknowledgment

The authors wish to thank Dr. C. J. O'Donovan of the Upjohn Company, Kalamazoo, Michigan, for the supplies of Orinase used in this study.

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EDITORIALS

ASIAN INFLUENZA—1957

If the Asian influenza pandemic continues to simulate the pandemics of 1889 and 1918, it may be anticipated that it will again come to our attention this winter. Be that as it may, the course of events in 1957 deserves a review as summarized in a series of papers published recently.

The outbreaks in this country occurred at widely separated points in the late spring of 1957, among naval personnel on the east coast, then among armed forces on the west coast, and in June at a convention of high school girls in California and soon at a religious conference in Iowa.[1] Those in attendance at the latter meeting seeded the virus here and there in foci throughout the country. True epidemic proportions were first reached in August in areas of Louisiana and Mississippi. Beginning in mid-September and extending into October, the disease was epidemic in many communities, and many schools were closed because of illness among both students and teachers. The peak of the epidemic was in late October, and it was essentially over by Thanksgiving Day.

The peak of mortality from influenza-pneumonia as usual was at a later date (due to delayed reporting, duration of disease and a later time of infection of older persons). This mortality peak occurred in the second week of November. There was, however, a second wave of influenza-pneumonia deaths in February and March of this year, especially in older persons, apparently puzzling to epidemiologists because there was no widespread epidemic influenza.

Langmuir[1] suggests that Asian influenza of 1957 was a phenomenon similar to the pandemics of 1889 and 1918, world-wide and different epidemiologically than interpandemic outbreaks of influenza.

Davenport and Hennessy[2] studied the antigenic response of patients infected with Asian influenza and correlated this with data gathered by others. Early returns from the Philippines and Chile in 1957 had indicated that the Asian strain was not unusually virulent or that there was a greater increase in the death-rate in middle-age. The attack rate was found to be highest in childhood and then declined. Studies have shown that with years the individual acquires immunity to the A and swine strains of influenza virus even though not to a new specific strain.

These authors carried the study further and showed Asian virus antibody to be present in persons older than 65 years and deduced that the Asian viruses were present in the pandemic of 1889. Also they found that persons over 80 years had a better antibody response to Asian virus vaccine than did those of younger ages. They believe that multiple exposures to A-strains of influenza virus build antibody and that specific antibody response to the Asian strain may occur because of exposure to it in years past.

Meiklejohn and Morris[3] carried out interesting studies in Air Force personnel. Past studies had shown that influenza vaccines had provided some protection in years when antigenic changes in the viruses had not been great. In the year 1957, with a major change in the virus from an antigenic standpoint, the effectiveness of vaccine was clearly reduced. Nevertheless, the vaccine of the specific Asian strain showed a protection over unvaccinated controls in those admitted to the hospital. These authors recommend that vaccines contain antigens of the major strains in each group, whether A or B to provide a wider protection which could quite easily be amplified by "booster" injections.

Walsh and collaborators[4] had planned a study of a number of aspects of influenza when the epidemic of Asian influenza was

1. Langmuir, A. D.: Asian Influenza in the United States, Ann. Int. Med. 49:483, 1958.
2. Davenport, F. M., and Hennessy, A. V.: The Clinical Epidemiology of Asian Influenza, Ann. Int. Med. 49:493, 1958.
3. Meiklejohn, G., and Morris, A. J.: Influenza Vaccination, Ann. Int. Med. 49:529, 1958.
4. Walsh, J., Burch, G. E., White, A., Mogabgab, W., and Dietlein, L.: A Study of the Effects of Type A (Asian strain) Influenza on the Cardiovascular System of Man, Ann. Int. Med. 49:502, 1958.

predicted. However, the epidemic struck New Orleans in August, 1957, before plans were complete. Nevertheless 34 patients were intensively studied by the Tulane group at Charity Hospital. Many clinical studies were done, but not in all patients of the group. All showed the prodromes and symptoms of the acute onset recognized by every physician. Viral cultures and/or antibody studies established the group as having the Asian strain of influenza. Clinical studies included x-ray examination of the chest, the blood picture, bacterial agglutination reactions, determinations of hepatic and renal function, bacteriologic surveys, examination of the spinal fluid, determinations of serum enzymes, and measurements of fluid and electrolytes. Bronchoscopy with biopsy of bronchial mucosa in 9 patients showed similar changes in each instance. These consisted of "irregular desquamation of the lining epithelium. . . . The basement membrane and the lamina propria were thickened and edematous. Vascular engorgement and inflammatory infiltrate, consisting of lymphocytes, histiocytes and plasma cells, with occasional eosinophilic and polymorphonuclear leukocytes, were consistently observed. The elastic tissue was frequently the site of edema, fragmentation, and increased affinity for eosinophilic stains."

These authors were particularly interested in the cardiovascular effects of Asian influenza. Responses to the disease in terms of tachycardia, bradycardia, levels of blood pressure, and respiratory rate were variable. Circulation time was normal in all so studied. Some showed vasoconstriction in digital vessels as studied by the rheoplethysmograph. Many detailed electrocardiographic studies were made serially in the usual manner as well as with spatial vectorcardiograms. Three-quarters of the patients developed abnormalities in the standard EKG which usually disappeared during convalescence. (This, the authors point out, is also true in many acute infectious processes.) Myocarditis of acute infection is discussed and evaluated by these writers. Four instances of severe cardiac complications occurred in the group,—two in patients having mitral stenosis, one a pregnant 20 year old woman, and one who had had only some months previously two bouts of rheumatic fever.

These four papers making up a Symposium on Influenza and presented at the meeting of the American College of Physicians in 1958 offer a review of the epidemiology and the immunologic and clinical aspects of Asian influenza as encountered in 1957. This may, by chance, be of interest in late 1958 or early 1959.

THE DIABETIC STATE

Though there has developed in the past decade or two an appreciation that diabetes mellitus is more than merely a disturbance of carbohydrate metabolism, such a concept is possibly not in the forefront of the family doctor's and specialist's mind to the degree it should be. The emphasis over the years has fallen naturally upon the disturbance in carbohydrate metabolism and its management, as is proper, because of the repeatedly demonstrated salutory effect upon the complications of diabetes.

This does not detract, however, from a consideration and study of a more basic concept of systemic disease or abnormality which may manifest itself in a "pre-diabetic" state through clinical findings commonly considered as complications of diabetes mellitus. Though sooner or later glycosuria will occur, commonly associated with the attendant symptoms of weight loss, polydipsia and polyuria, the carbohydrate aspect of the disease may be demonstrated by an abnormal glucose tolerance test during this "pre-diabetic" state.

Thus, it has come to be recognized that overweight and edematous babies, with an increase in stillbirths, may occur in the years preceding clinical diabetes. Likewise evidence has accumulated in the literature that diabetic retinopathy, arteriosclerosis, and even the pathologic lesions of Kimmelstiel-Wilson disease may occur before glycosuria and its symptoms appear.

Ellenberg[1] recently has reconsidered and emphasized the neuropathy which may pre-

1. Ellenberg, Max: Diabetic Neuropathy as Presenting as the Initial Clinical Manifestation of Diabetes, Ann. Int. Med. 49:620, 1958.

cede glycosuria to call attention to its significance as a possible facet of diabetes mellitus. Though this was long considered to be a complication of prolonged and poorly controlled diabetes, some authors over the years have recognized that neurologic disturbances may antedate clinical glycosuria. The present author reports 7 instances of diabetic neuropathy in which the disturbances related to the nervous system preceded glycosuria. Cases appeared in both the young and the old. Three still had not developed glycosuria at the time of the report though under careful observation over a period of some months. A family history of diabetes appeared in some. Improvement in the neuropathy occurred upon control of the glycosuria if it had been established. Ellenberg emphasizes the tenet that neuropathy also may be the first manifestation of the condition known as diabetes mellitus before hyperglycemia and glycosuria are established. With this in mind he emphasizes the need for awareness of this on the part of the medical profession, the importance of a family history, and a determination of the blood sugar two hours after a meal rather than in a fasting state. Thereby the clue for need of a sugar tolerance test which may lead to the diagnosis of a "prediabetic" state may be provided.

25 YEARS AGO

Notes on Rheumatic Heart Disease with Reference to Cause of Death*

"Any extensive experience in the care of those suffering with rheumatic heart disease discloses a great variability in the course such patients run, the duration of life and in the complications that they manifest, though the exact reasons for this are far from clear. One patient with valvular heart disease carries on in comparatively good health for a great many years and another who starts with apparently the same lesion succumbs in a short while. Death is often ascribed to heart failure when a closer analysis of events reveals that a more specific complication which cannot be regarded as ordinary circulatory failure was the direct cause of the fatality. . . . With this in mind a careful study was made of all the cases of rheumatic heart disease in which postmortem examination was performed at this hospital from 1913 to 1932, who died as a result of their cardiac lesions.

"*Summary and Conclusions.* One hundred and forty-eight cases of rheumatic heart disease were studied to ascertain the cause of death. It was found that congestive heart failure accounted for only 33.1 per cent of the fatalities, acute rheumatic carditis for 23 per cent, peripheral emboli and thromboses for 11.5 per cent, subacute bacterial endocarditis for 29 per cent, and 3.4 per cent died of miscellaneous cardiovascular accidents like angina pectoris or acute pulmonary edema.

"The groups of congestive failure and emboli and thromboses were the oldest, subacute bacterial endocarditis a little younger and acute rheumatic carditis the youngest.

"Those that had aortic valvular disease alone were the oldest (52.5). The mitral cases came next (42.8 years) and the cases with combination of aortic, mitral and tricuspid were youngest (30 to 35 years). . . .

"A past history of rheumatic fever or chorea was not found with equal frequency among the various groups. Although we believe that stenosis of any of the valves is . . . practically invariably due to rheumatic infection, the multiform character of the early illness prohibits obtaining a positive past history in many instances. The greater the number of valves involved, the more frequently was a positive past history obtained. This is true for two reasons: such patients are more apt to have had more than one infection and they die at a younger age, so that the early illnesses are not forgotten. This explains why cases of aortic stenosis who die at an old age less frequently have a positive past history.

"In speaking of valvular lesions in this review, except for those cases dying of subacute bacterial endocarditis, we mean stenosis to a greater or lesser extent. A striking finding was the great frequency of involvement of the aortic and tricuspid valves. When the tricuspid valve was involved, the mitral was always diseased as well, and frequently the aortic.

"Auricular fibrillation was almost invariable in the emboli and thrombi group, very common in those dying of congestive heart failure, much less common in the acute rheumatic carditis group, and practically absent in those who died of subacute bacterial endocarditis. The presence of mitral stenosis is the most common accompaniment of auricular fibrillation, although this irregularity occurs occasionally in patients who have only aortic stenosis. . . .

"Pericarditis with or without adhesions was less frequent in the older patients. It was most common in the group with acute rheumatic carditis, fairly frequent in those with congestive heart failure, and very rare with subacute bacterial endocarditis."

*Laws, C. L., and Levine, S. A.: Clinical Notes on Rheumatic Heart Disease with Special Reference to the Cause of Death, Am. J. M. Sc. 186:833, 1933.

The President's Page of the Woman's Auxiliary

The annual meeting in New Orleans was glamorous and exciting for the women who attended this year. There were many features which gave the visitors a chance to see the city and to know more of its size and history. There was a boat trip on the Mississippi, a tour of some of the homes in the garden district and a bus tour of the city followed by a tea at the Orleans Club in cooperation with the Orleans Parish Medical Auxiliary. There were breakfasts each day including "Breakfast at Brennan's" and the annual Doctor's Day Awards Luncheon. This was in carnival style with the tables decorated with masks, noise-makers and trinkets and with replicas of famous floats on the head tables. A pageant was presented in true Mardi Gras style with the King, Queen and their attendants all in royal attire. The sweepstakes award of the George D. Feldner Doctor's Day trophy was won by the new SMA Auxiliary in Washington, D. C.

Mrs. George W. Owen

The meetings were very well attended with the general meeting on Tuesday having every seat taken. The registration this year broke all records with 895 women during the three days. This must have taxed the Convention Committee but it made the meetings more interesting and enjoyable. Many thanks go to the women in New Orleans who worked so untiringly to make this a wonderful convention.

During this meeting our beloved little Mary became a Past-President and Mrs. George W. Owen of Jackson, Mississippi, became your new President. She faces the year with deep humility, knowing what has been accomplished in the years just past and realizing the great responsibility in trying to "represent" the Southern Auxiliary. However with the wonderful slate of officers and chairmen who are to share the work, it will be a joy and a never-to-be-forgotten experience. A list of the new officers, chairmen and councilors follow.

Officers

Mrs. George W. Owen, *President*, 627 Mohawk Ave., Jackson, Miss.

Mrs. John M. Chenault, *President-Elect*, No. 4 Cherokee Lane, Decatur, Ala.

Mrs. Kalford W. Howard, *First Vice-President*, 921 A. St., Portsmouth, Va.

Mrs. Roy A. Douglass, *Second Vice-President*, East Main St., Huntingdon, Tenn.

Mrs. Elias Margo, *Third Vice-President*, 1641 Queenstown Rd., Oklahoma City, Okla.

Mrs. Richard E. Dunkley, *Treasurer*, 2220 46th St. N.W., Washington, D. C.

Mrs. Martyn Schattyn, *Recording Secretary*, No. 9 Huntleigh Downs, St. Louis 22, Mo.

Mrs. George D. Feldner, *Historian*, 3814 Louisiana Parkway, New Orleans, La.

Mrs. Harvey F. Garrison, *Parliamentarian*, 748 Gillespie, Jackson, Miss.

Mrs. O. A. Schmid, *Corresponding Secretary*, Westhaven Blvd., Jackson, Miss.

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SOUTHERN MEDICAL NEWS

ALABAMA

Dr. Tom D. Spies, Birmingham, famed for his achievements in the field of nutrition, has added still another link to his long chain of honors. The magazine, *Dixie Business*, has chosen Dr. Spies to receive its 1958 Distinguished Service Award as "a great American." Just last year, Dr. Spies was awarded the American Medical Association's Distinguished Service Award, the highest honor bestowed by that organization. Dr. Spies has also been elected First Vice-President of the Southern Medical Association at its recent meeting held in New Orleans.

The following physicians have been elected officers of the newly organized Society of Clinical Hypnosis: President, Dr. Sam Shafferman; Vice-President, Dr. Leo Dillon; Secretary, Dr. W. A. Cunningham; and Treasurer, Dr. M. Mashburn, all of Birmingham.

Dr. Leland C. Clark, Jr., Birmingham, inventor and developer of Clark Oxygenator used in advance cardiac surgery, has been appointed Associate Professor of Biochemistry in the Department of Surgery at the University of Alabama Medical Center.

Dr. James Burnett, Birmingham, has been elected to the Board of Trustees of Jefferson County Medical Society.

Dr. Ernest Gonzales, formerly of Oklahoma, has joined the Department of Pathology at the University of Alabama Medical School.

Dr. J. S. Jordan, Birmingham, has been appointed to the East End Memorial Hospital Executive Committee.

Dr. James A. Pittman, Jr., Birmingham, has joined the Department of Medicine in the Section of Endocrinology and Metabolism at the University of Alabama Medical School on a full-time basis.

Dr. Ferdinand Schwartz, Birmingham, has been elected to the Executive Board of the American Institute of Ultrasonics in Medicine at their Interim Meeting held in Philadelphia, Pennsylvania.

Dr. R. J. Smith is new chief of staff at East End Memorial Hospital, Dr. E. C. Cermak is Vice-President

and Dr. Paul Fisher, Secretary, all of Birmingham.

Dr. H. A. Russakoff, Birmingham, was elected recently as President-Elect of the Southern Trudeau Society. The society is comprised of physicians interested in tuberculosis and other chest conditions.

Dr. J. Garber Galbraith has been elected Chairman of the Health Council of Birmingham and Jefferson County. He succeeds Dr. John W. Simpson who was presented with a citation for his leadership and "zeal and selflessness to advance the health and welfare services in this community."

Dr. John B. Hodo has been elected a Fellow in the American College of Obstetricians and Gynecologists and Dr. W. H. Robertson is a candidate for Fellowship. Both are of Birmingham.

Dr. Joe Donald, Birmingham, has been named to the American College of Surgeons Board of Regents.

Dr. T. Joseph Reeves, Birmingham, has returned to duty in the cardiovascular section of the Department of Medicine at the Alabama Medical Center after a year at the Queen Elizabeth Hospital, Birmingham University School of Medicine, Birmingham, England.

Dr. George T. Kimbrough, Birmingham, has been made a recipient of one of the annual Wyeth Laboratories pediatric residency fellowships.

ARKANSAS

Dr. Myron D. Lecklitner, Hot Springs, is the new Director of Hot Springs National Park Physical Medicine Center. He succeeds Dr. Howell Brewer.

Dr. James M. Kolb, Clarksville, is the new President-Elect of the Arkansas State Medical Society. Dr. Kolb just recently was also named to the AMA Committee on Medical Practices.

Dr. Horace N. Marvin, Little Rock, has been promoted to Professor and Head of the Department of Anatomy at the University of Arkansas Medical Center. Dr. Marvin succeeds Dr. William C. Langston, who has reached emeritus rank after serving on the faculty for 28 years.

Dr. Lowry H. McDaniel, Tyronza, was again Chairman of the overall program of American Medicine's "Festival of Faith" held in Tyronza in October.

DISTRICT OF COLUMBIA

Dr. Robert H. Barter, Harvard, Illinois, has been promoted from Associate Professor to Professor of Obstetrics and Gynecology and Executive Officer of the Department at the George Washington University School of Medicine.

Dr. Edward C. Mazique was elected President of the National Medical Association at its Annual Meeting in Milwaukee. Dr. Mazique is also President of the Medico-Chirurgical Society of the District of Columbia.

Dr. Preston A. McLendon, Chairman of the Council on Rehabilitation, was recently appointed a member of the D. C. Commissioners' Committee on Employment of the Physically Handicapped.

At the recent annual meeting of the American Medical Association, Dr. Thomas M. Peery, Professor of Pathology at George Washington University School of Medicine, was elected Chairman of the AMA's Section on Pathology and Physiology.

Dr. Seymour Perlin, Chief of the Section on Psychiatry, Laboratory of Clinical Science, at the National Institute of Mental Health, will take a year's leave of absence from his present post to accept a Fellowship at the Center for Advanced Study in the Behavioral Sciences at Stanford, California. He is one of 49 scholars and scientists to receive the award for the academic year of 1958-59.

Brig. General Carl W. Tempel succeeded Brig. General Sam F. Seeley in the Office of the Army Surgeon General as Chief of the Professional Division. General Tempel will be responsible for the professional activities of the Army Medical Service in all general and specialty fields of medical practice.

Dr. G. Halsey Hunt, formerly Chief of the Hospital Division of PHS and more recently Director of the Center for Aging Research, has been named Chief of the Division of General Medical Sciences.

Dr. Clifton R. Gruver has been appointed to represent the Medical Society on the Health Committee of the District Health and Welfare Council.

The Executive Board of the Medical Society of the District of Columbia has voted to award the Society's Annual Certificate for Meritorious Service to Dr. Donald Stubbs, President of Medical Service of the District of Columbia, for his able leadership in the prepayment field and for his dedication to the position which he holds in the District's Blue Shield Plan, Medical Service of D. C.

The Washington, D. C. Dermatological Society has elected the following officers: Chairman, Dr. Raymond A. Osbourn; Vice-Chairman, Dr. Peter N. Horvath; and Secretary-Treasurer, Dr. June Shafer, Arlington, Virginia.

Dr. Benjamin Karpman, Chief Psychotherapist and Consultant at Saint Elizabeths Hospital, was invited by the British Institute for the Study and Treatment of Delinquency to lecture in England on general psychiatric problems.

Dr. Mathew Ross, Beverly Hills, California, has taken office as Medical Director of the American Psychiatric Association in Washington, succeeding Dr. Daniel Blain.

FLORIDA

Dr. J. Brown Farrior, Tampa, received the Second Award for his work on the plastic reconstruction of the ear drum, presented at the American Academy of Ophthalmology and Otolaryngology meeting recently held in Chicago, Illinois.

Drs. J. W. Barrett, Theodore R. Struhl, and Stanley E. Schwartz, all of Miami, have recently been made Fellows in the American College of Surgeons.

Dr. Stephen Cole Wright, Miami, has been appointed by Governor Leroy Collins as the new member of the Florida Children's Commission.

Dr. Gerard F. Carter, Miami, has been made an Associate Fellow of the American College of Allergists.

Dr. S. Carnes Harvard, Brooksville, has been appointed a member of the State Board of Medical Examiners by Governor Leroy Collins. Dr. Harvard

is First Vice-President of the Florida Medical Association.

Dr. Thomas H. Bates, Lake City, has been installed as President of the Columbia County Unit, Florida Division of the American Cancer Society, and Dr. Robert M. Sasso, also of Lake City, as Medical Director.

Drs. James A. Winslow, Jr., William C. Blake and Hawley H. Seiler of Tampa have been appointed members of the Florida Heart Association. Dr. Winslow will also serve as a member of the research committee.

GEORGIA

Dr. Jack C. Norris, Atlanta, has been cited by the Medical College of South Carolina for his "distinguished services in organized medicine, and for his many years of loyalty as an alumnus." The Citation was presented by Dr. Kenneth M. Lynch, President, at the National Alumni dinner in New Orleans November 4. It was the first ever given by the college in 126 years. Dr. Norris is Councilor for Georgia to the Southern Medical Association, and a member of the Executive Committee, Assistant Clinical Professor of Pathology, Emory University, and former President of the Fulton County Medical Society.

Dr. William A. Hopkins, Atlanta, is the new President of the Georgia Trudeau Society, having been elected at the Georgia Tuberculosis Society's annual meeting held in Savannah.

Dr. Osler A. Abbott, Atlanta, has been named President of the American College of Cardiology at a recent meeting held in St. Louis, Missouri.

Dr. Edward S. Wright, Atlanta, has been elected Vice-President of the American Medical Society of Vienna, Austria. This organization, founded in 1879, sponsors postgraduate courses in medicine at the University of Vienna.

Dr. Ross L. McLean has been appointed to the newly created Chair of Tuberculosis and Pulmonary Diseases at the Emory University School of Medicine, Atlanta, established by the Atlanta Tuberculosis Association.

Dr. Harriet E. Gillette, Atlanta, has been elected Secretary of the American Academy of Physical Medicine and Rehabilitation.

KENTUCKY

The Kentucky State Medical Association has elected the following officers: Dr. Robert W. Robertson, Paducah, President; Dr. Irvin Abell, Jr., Louisville, President-Elect; Dr. Marvin A. Lucas, Louisville, Dr. Thomas O. Meredith, Jr., Harrodsburg, and Dr. Lillard F. Beasley, Franklin, Vice-Presidents; Dr. Woodford B. Troutman, Louisville, Secretary; and Dr. Delmas M. Clardy, Hopkinsville, Treasurer.

William H. Knisely, Ph.D., Associate Professor of Anatomy, and Assistant Professor of Medicine, Duke University School of Medicine, Durham, North Carolina, has been appointed Chairman of the Department of Anatomy at the University of Kentucky's new medical school and George W. Schwert, Jr., Ph.D., Professor of Biochemistry at Duke University, has been appointed head of the biochemistry department.

Dr. Mary N. Smith, Booneville, has been appointed Boyle County Health Officer and Medical Director of the Boyle County Board of Health. Dr. Smith succeeds Dr. P. C. Sanders of Danville.

Dr. Travis B. Pugh, Medical Advisor to Selective Service Board No. 95 in Bowling Green, has received a 15 year certificate for voluntary service with the Board there.

Dr. C. C. Howard, Glasgow, has been appointed by Governor A. B. Chandler to serve on his Committee on Employment of the Physically Handicapped.

LOUISIANA

The twenty-second annual meeting of the New Orleans Graduate Medical Assembly will be held March 2, 3, 4 and 5, 1959, headquarters at the Roosevelt Hotel. Details of the meeting and the clinical tour are available at the office of the Assembly, Room 103, 1430 Tulane Avenue, New Orleans 12.

Dr. Esmond A. Fatter, New Orleans, has been installed as President of the Louisiana Academy of General Practice. Other officers elected were: Dr. J. W. Crookshank, Lake Charles, President-Elect; Dr. J. J. Massony, Westwego, First Vice-President; Dr. B. M. Woodward, Lake Charles, Second Vice-President; Dr. F. I. Nicolle, New Orleans, Secretary; and Dr. M. D. Robinson, Denham Springs, Treasurer.

Dr. Mercer G. Lynch, New Orleans, received the "Award of Merit" of the American Academy of Ophthalmology and Otolaryngology at its meeting in Chicago, Illinois.

Dr. A. Neal Owens, New Orleans, has been elected First Vice-President of the United States Section of the International College of Surgeons.

Dr. James H. Allen, Professor and Chairman of the Department of Ophthalmology, Tulane School of Medicine, has been presented the Beverly Myers Achievement Award by the American Board of Opticianry at its recent meeting in Chicago. This award is made to persons who have been elected by the Board of Trustees of the Foundation by reason of their meritorious contributions and their outstanding contributions to visual optics or to the broader field of vision.

Dr. Sydney Jacobs, Associate Professor of Clinical Medicine, Tulane School of Medicine, was elected President-Elect of the Southern Tuberculosis Conference at their meeting in Richmond, Virginia.

Dr. Howard Mahorner, New Orleans, has been named Secretary of the Board of Governors' of the American College of Surgeons.

Honorary Fellowships in the American College of Gastroenterology were presented to Dr. Edgar F. Hull and Dr. James D. Rives of the Louisiana State University School of Medicine.

Dr. Russell L. Holman, Professor and Head of the Department of Pathology, Louisiana State University School of Medicine, has been reappointed a member of the National Research Council to represent the American Society for Experimental Pathology in the Division of Medical Sciences for a three year period.

Continued on page 1632

BOOKS RECEIVED

Health Yearbook 1957. Compiled by Oliver E. Byrd, M.D., Professor of Health Education, Stanford University. 267 pages. Stanford, Calif.: Stanford Universtiy Press, 1958. Price $5.50.

Orr's Operations of General Surgery. By George A. Higgins, M.D., Associate Professor of Surgery; and Thomas G. Orr, Jr., M.D., Associate in Surgery, both of the University of Kansas School of Medicine. Third edition, 992 pages, with 1,990 illustrations. Philadelphia: W. B. Saunders Company, 1958. Price $20.00.

Milestones in Modern Surgery. By Alfred Hurwitz, M.D., Professor of Surgery, State University of New York College of Medicine; and Georga A. Degenshein, M.D., Assistant Attending Surgeon, Maimonides Hospital, N. Y. 510 pages. New York: Paul B. Hoeber, Inc., 1958. Price $15.00.

A Manual on Cardiac Resuscitation. By Robert M. Hosler, M.D., Cleveland, Ohio. Second edition, 202 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1958. Price $5.50.

Religious Doctrine and Medical Practice. By Richard Thomas Barton, M.D., Associate Consultant, University of California. 90 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1958. Price $3.75.

Causation of Cancer. 21 papers by 27 authors. British Medical Bulletin, Vol. 14, No. 2, May 1958. London: The British Council. Price $4.00.

Correlative Neuroanatomy and Functional Neurology. By Joseph G. Chusid, M.D., Attending Neurologist, St. Vincent's Hospital, New York; and Joseph J. McDonald, M.D., Dean of Medical Faculty, American University of Beirut, Lebanon. Ninth edition, 337 pages. Los Altos, Calif.: Lange Medical Publications, 1958. Price $4.50.

Review of Physiological Chemistry. By Harold A. Harper, Ph.D., Associate Professor of Physiological Chemistry, University of California School of Medicine. Sixth edition, 366 pages. Los Altos, Calif.: Lange Medical Publications, 1957. Price $4.50.

Principles of Internal Medicine. Editors, T. R. Harrison, Raymond D. Adams, Ivan L. Bennett, Jr., William H. Resnik, George W. Thorn, and M. M. Wintrobe. Third edition, 1,782 pages. New York: McGraw-Hill Book Company, Inc., 1958. Price $18.50.

Pediatric Surgery. By Orvar Swenson, M.D., Surgeon-in-Chief, The Boston Floating Hospital for Infants and Children, Professor of Pediatric Surgery, Tufts University School of Medicine. 730 pages. New York: Appleton-Century-Crofts, Inc., 1958.

Medical Electrical Equipment. Principles, Installation, Operation and Maintenance of Electrical Equipment Used in Hospitals and Clinics. Advisory Editor, Robert E. Molloy, M.B. 306 pages, 238 illustrations. New York: Philosophical Library Inc., 1958. Price $15.00.

A Modern Practice of Obstetrics. By D. M. Stern, M.A., M.B., B.Ch. (Cantab.) F.R.C.S., F.R.C.O.G.; and C. W. F. Burnett, M.D. (Lond.), F.R.C.S., F.R.C.O.G., both Obstetric and Gynaecological Surgeons, West Middlesex Hospital and its annexes. Second edition, 246 pages. Baltimore: The Williams & Wilkins Company, 1958. Price $9.00.

Electrocardiography. By Michael Bernreiter, M.D., Assistant Clinical Professor of Medicine, University of Kansas Medical School. 129 pages. Philadelphia: J. B. Lippincott Company, 1958. Price $5.00.

The Cerebrospinal Fluid—A Ciba Foundation Symposium. Edited by G. E. W. Wolstenholme and Cecilia M. O'Connor. 326 pages, with 141 illustrations. Boston: Little, Brown and Company, 1958. Price $9.00.

Illustrated Preoperative and Postoperative Care. By Philip Thorek, M.D., Professor of Surgery, Cook County Graduate School of Medicine and Clinical Associate Professor of Surgery, University of Illinois College of Medicine. 91 pages. Philadelphia: J. B. Lippincott Company, 1958. Price $5.00.

Etiology and Treatment of Leukemia. Proceedings of the First Louisiana Cancer Conference. Edited by Walter J. Burdette, M.D., Professor and Head of the Department of Surgery and Director of the Laboratory of Clinical Biology, University of Utah College of Medicine. 158 pages. St. Louis: The C. V. Mosby Company, 1958. Price $4.00.

Obstetrics and Gynecology. By J. Robert Willson, M.D.; Clayton T. Beecham, M.D.; Isador Forman, M.D.; and Elsie Reid Carrington, M.D., all of Temple University Medical Center, Philadelphia. 589 pages. St. Louis: The C. V. Mosby Company, 1958. Price $10.75.

The Psychology of Medical Practice. By Marc H. Hollender, M.D., Professor and Chairman, Department of Psychiatry, State University of New York. 262 pages. Philadelphia: W. B. Saunders Company, 1958. Price $6.50.

The Medical Assistant. By Miriam Bredow. 419 pages. New York: McGraw-Hill Book Company, Inc., 1958. Price $7.50.

Joint FAO/WHO Expert Committee on Brucellosis. Third Report. World Health Organization Technical Report Series No. 148. New York: Columbia University Press, 1958. Price $.60.

Classification of Atherosclerotic Lesions. Report of a Study Group. World Health Organization Technical Report Series No. 143. New York: Columbia University Press, 1958. Price $.30.

A Primer in Medical Technology. By Paul M. Kraemer, Department of Health and Hospitals, City and County of Denver, Colorado. 330 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1958. Price $7.75.

Medical Terminology Simplified. By Louis L. Perkel, M.D., Professor of Gastroenterology, Seton Hall College of Medicine, Jersey City. 103 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1958. Price $3.85.

Diseases of the Esophagus. By J. Terracol, Professor of the Faculty of Medicine of Montpellier, France; and Richard H. Sweet, Associate Clinical Professor of Surgery, Harvard Medical School. 682 pages. Philadelphia: W. B. Saunders Company, 1958. Price $20.00.

INSTRUCTIONS TO CONTRIBUTORS

Exclusive Publication: Articles offered for publication must be contributed solely to the Southern Medical Journal.

Manuscripts: Manuscripts should be original copy, typewritten, double-spaced, with wide margins. Because of lack of space, it is necessary to limit the number of bibliographic references to twenty. Footnotes and references should conform to the following style:

1. Doe, J. E.: What You Should Know about It, New England J. Med. 243:435, 1950.

Illustrations: Black and white glossy prints, preferably 5 by 7 inches, and drawings in India ink on white paper are required. The author's name, number and indication of top, if doubtful, should be attached. Necessary plates not exceeding six, or one and a half pages, will be furnished by the Journal.

Reprints: Reprints are available at publisher's cost. An order form will accompany author's galley proof and should be returned with the galley to the Editor.

Book Reviews: Books and monographs submitted for review should be mailed to the Editor. Acknowledgment will appear in the Journal. Selection rights reserved.

Editorial Address: All manuscripts, corrected galley proof, reprint orders, books for review and related correspondence should be addressed to the Editor, R. H. Kampmeier, M.D., Vanderbilt University School of Medicine, Nashville 5, Tennessee.

Business Address: All correspondence related to membership, subscriptions, advertising, and other business should be addressed to the Southern Medical Association, 2601 Highland Avenue, Birmingham 5, Alabama.

BOOK REVIEWS

Cerebral Lipidoses. A Symposium

Edited by J. N. Cumings, M.D., F.R.C.P., Director, Department of Biochemical Research, Institute of Neurology, London. 208 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1957. Price $8.50.

This volume is an account of a symposium which was held in Antwerp in 1955. The participants include eminent investigators who have approached this general subject from different viewpoints. The histopathologic, histochemical and clinical features of the lipidoses are presented, and there are also comments on some of the more recently described diagnostic tests. Many of the demyelinating diseases, the cerebromacular degenerations, gargoylism, Nieman-Picks disease and related disorders are considered.

This book is recommended to all neurologists and will be of interest to biochemists and pathologists who are concerned with these disorders.

The Early Diagnosis and Treatment of Acoustic Nerve Tumors

By J. Lawrence Pool, M.D., Professor of Neurological Surgery, Columbia University; and Arthur A. Pava, M.D., Assistant Neurological Surgeon, Wesson Memorial Hospital, Springfield, Mass. American Lecture Series, 153 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1957. Price $5.50.

This very informative monograph is the result of a broad experience in the surgical treatment of eighth nerve tumors. It includes a study of the clinical aspects of 122 cases and a description of the surgical technics used in 162 operations on a series on 135 patients. After reviewing the symptoms and signs, the authors consider the various diagnostic procedures currently employed. There are also excellent chapters on atypical cases, differential diagnosis and bilateral eighth nerve tumors.

In the section on the surgical procedure, the historical background is briefly reviewed and the question of total versus subtotal tumor removal is considered. With the aid of diagrams and photographs the operative technic is fully explained. The postoperative management, including the problem of postoperative facial paralysis, is outlined, and a bibliography of 96 references is appended.

This volume is recommended to all neurologists and neurosurgeons. It should find a place in all medical libraries.

The Salient Points and the Value of Venous Angiocardiography in the Diagnosis of the Cyanotic Types of Congenital Malformations of the Heart

By Benjamin M. Gasul, M.D.; Gershon Hait, M.D.; Robert F. Dillon, M.D.; and Egbert H. Fell, M.D. 80 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1957. Price $3.50.

This is a short treatise based on the experience of the authors over ten years with 421 venous angiocardiograms performed on 283 patients with cyanotic types of congenital heart malformations. The evaluation of angiocardiography as a diagnostic procedure was made by examination of these films only; no other information of any kind was used. From this study all cases of cyanotic congenital heart disease were divided into 4 groups: (I) Those in which correct diagnosis can *almost always* be made by proper interpretation of good angiocardiograms. (II) Those in which correct diagnosis can *usually* be made. (III) Those in which correct diagnosis *usually cannot be made.* (IV) Those which *always require additional studies.*

Group I consists of Tetralogy of Fallot, Complete Transposition of the Great Vessels and Anomalous Drainage of all Pulmonary Veins into the Supracardiac System Veins. The Pathology, Hemodynamics and the Salient Angiographic Features are discussed and illustrated diagrammatically and by reproductions of films in each group. Group II is comprised of Tricuspid Atresia; Pulmonary Stenosis with Normal Aortic Root and Atrial Communication and Right to Left Shunt; Persistent Truncus Arteriosus; Mitral Atresia with Ventricular Septal Defect. Group III: Taussig-Bing Anomaly; Eisenmenger Complex, and Pentalogy are used. Group IV: Not presented. A short discussion of the ten entities in Groups I, II and III is added.

This work is a valuable guide and aid for those doing angiocardiographic work.

Chronic Illness in a Large City. The Baltimore Study

By the Commission on Chronic Illness. 594 pages. Published for the Commonwealth Fund by Harvard University Press, Cambridge, Mass., 1957. Price $8.00.

This is the fourth and final volume on Chronic Illness in the United States and is concerned with the prevalence of chronic illness in a large city. Baltimore was selected for the study for a number of reasons, not the least of which was the availability of the clinical facilities of the Johns Hopkins Hospital. There were four steps to the study. The first consisted of a household questionnaire survey comprising some 12,000 people living in households that were selected at random. The second step was a clinical evaluation of a selected sample of the first group, weighted with individuals who had indicated some chronic disease or disability. The third step comprised a screening of all household individuals not included in the second step. The fourth step was a vocational rehabilitation demonstration on some 36 individuals who had been designated as having a rehabilitation potential after undergoing their clinical evaluation in step two.

All of the above added up to a rather ambitious program involving large numbers of personnel from a variety of disciplines. There was careful planning and close attention to detail every step of the way.

The end result was rather a let-down to this reviewer, however, because the age-old obstacle of human inertia and apathy reared up to make a shambles of these "best laid plans." Thus, of those invited to participate in the clinical evaluation, only 62.6% responded despite every effort to consider the convenience of the patient. The experience with the screening study was even worse,—only 29% responded. Of the 36 individuals selected for the vocational rehabilitation demonstration only 10 were either rehabilitated or in the process of being rehabilitated, while for the remainder, it was either unsuccessful, unsatisfactory, not feasible, or resisted. The authors of the report are fully cognizant of the limited usefulness of their data because of the poor response of their selected subjects.

Some valuable information has come out of these studies nevertheless. It has been demonstrated again that the household interview falls far short of bringing to light complete and accurate information concerning the health of the respondents and their families. This is not new or startling, but further weight is added to the previous evidence in this category. The evaluation studies indicated, among many other things, an unexpectedly high prevalence of cardiac disease, which may be peculiar to Baltimore, but suggests the need for investigation elsewhere. The value of screening procedures was also tested in these studies. Undoubtedly, the data will be very useful to health and welfare agencies in the city of Baltimore for future and current planning for service. As the authors point out, however, the data are primarily, and perhaps exclusively useful to Baltimore. Their application to other areas would be hazardous.

The Pathogenesis of Coronary Occlusion

By A. D. Morgan, M.D., Head of Morbid Anatomy Department and Reader in Pathology, Westminster Hospital and Medical School, London. 166 pages. Springfield, Ill.: Charles C. Thomas, Publisher, 1956. Price $8.50.

Dr. Morgan has distinguished himself in writing an excellent comprehensive review on the pathogenesis of coronary artery disease.

The first part consists of a historical review of coronary artery disease and includes the past and current evaluation of this extensive and puzzling problem. The author reviews, without prejudice, the scientific literature and the numerous conflicting theories concerning the pathogenesis of coronary artery disease. There is emphasis, however, upon the thrombogenic hypothesis of coronary artery disease. The biochemical approach to coronary artery disease, with an adequate review of the literature, includes a discussion of serum cholesterol, serum lipids, chylomicrons, and altered cholesterol-phospholipid ratio. Other contributory factors in the pathogenesis of coronary artery disease such as hypertension, disorders of metabolism, and various endocrine factors are included.

Part two is devoted to an excellent pathological description with illustrations of the important basic changes within the adventitia, media, and intima of the coronary vessels. The role of intimal vascularization, hemorrhage, and the nature of arterial thrombosis is clearly demonstrated. Justifiable emphasis is placed upon the puzzling question of why thrombosis is so commonly found within the coronary circulation.

This is an outstanding book on the pathogenesis of coronary artery occlusion with excellent pathological illustrations.

This reviewer recommends this book to the student, to the teacher, and to the practicing physician so there may be a clearer universal understanding of this comprehensive problem.

Year Book of Drug Therapy, 1957-1958

Edited by Harry Beckman, M.D., Director Departments of Pharmacology, Marquette University Schools of Medicine and Dentistry. 490 pages. Chicago: The Year Book Publishers, 1957. Price $7.50.

The Year Books are so well known that it hardly seems necessary to call attention of the reader to these excellent abstracts from the literature annually.

The Year Book on Drug Therapy has particular value irrespective of the field in which the doctor may be practicing. It is a book which should be in the office of every physician, since it is only in this way that the doctor may hope to find information on the multitude of products brought to his attention annually by the brochures and the visitors from the pharmaceutical houses. For the busy physician the Year Book offers him the opportunity of quickly checking scientific data concerning many of the preparations which he is urged to prescribe.

Coronary Heart Disease

By Milton Plotz, M.D., Clinical Associate Professor of Medicine, State University of New York. 344 pages. New York: Paul B. Hoeber, Inc., 1957. Price $12.00.

This book is a comprehensive presentation of coronary heart disease, with an introduction by William Dock. Each chapter contains a lengthy bibliography. The first chapter is a simplified pathologic and physiologic review with unique line drawings explaining the processes involved in normal and insufficient coronary artery circulation. The second chapter is a thorough review of etiologic mechanisms. One chapter reviews lipid metabolism and its relationship to coronary artery disease, and another reviews the possible relationship of tobacco to diseases of the coronary circulation. The sixth chapter is an extremely valuable description of the pathology involved with coronary artery disease. The book includes a review of the clinical syndrome of angina pectoris and myocardial infarction, and also the complications and sequelae of acute myocardial infarction. There are chapters devoted to prognosis, therapy and diet. A portion of the book is devoted to a summary of the current diagnostic methods, surgical treatment, and even medicolegal aspects of coronary disease.

This is valuable as a source of up-to-date review material on the various aspects of coronary heart disease. The annotated bibliographies are of great value. The book is a welcome addition to the office library of the cardiologist and to the ready reference library of all students of heart disease.

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SOUTHERN MEDICAL NEWS

Continued from page 1617

Dr. Alton Ochsner, New Orleans, was the recipient of the 1958 Honor Award of the Mississippi Valley Medical Society presented at their annual dinner in Chicago, Illinois.

Dr. Edwin H. Lawson, New Orleans, was elected President-Elect of the Southern Medical Association at its recent meeting held in New Orleans. Dr. Edwin L. Zander, also of New Orleans, was elected Second Vice-President.

MARYLAND

Drs. Sidney W. Klein, Floy C. Helwig, Allan L. Drash, and George A. Lentz, all of Baltimore, are recipients of the annual Wyeth Laboratories pediatric residency fellowships.

Dr. Harold W. Eliason, Cumberland, has been reappointed by the Governor to the Advisory Council on Hospital Construction in Maryland.

Dr. James H. Feaster, Oakland, has been named Deputy Medical Examiner for Garrett County.

Dr. Ralph Calandrella, Kitzmiller, has been reelected President of the Garrett County School Board.

MISSISSIPPI

The Mississippi Society of Anesthesiologists has elected the following officers: President, Dr. Thomas J. Marland, Jackson; Vice-President, Dr. William E. Sheffield, Charleston; and Secretary-Treasurer, Dr. Curtis W. Caine, Jackson.

Dr. Durward L. Blakey, Clarksdale, became Director of the Division of Preventable Disease Control of the Mississippi State Board of Health succeeding Dr. A. L. Gray, Jackson, who was promoted to the position of State Health Officer.

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BOOK REVIEWS

Continued from page 1620

The Atomic Age and Our Biological Future

By H. V. Brondsted, translated by E. M. Huggard. 76 pages. New York: Philosophical Library, 1957. Price $2.75.

This little book offers a simple, easily understood discussion of the biologic effects of radiation on man. It is written in a popular style with a good measure of the writer's own philosophy because much of what the author discusses is still in the realm of speculation. He gives a brief but clear description of known effects of radiation on mutation, on the human body, on sterility, on embryonic development and on man's genetic constitution.

Perhaps the most important lesson from this book is the concept that man may not be able to see the genetic effects of radiation in his own generation or even in the next 2 or 3 generations, but nevertheless excessive doses of radiation now could result in serious mutations to the detriment of man's future descendents, and that he had better take preventive measures now by avoiding excess exposure to x-ray and radioisotopes and eliminating H-bomb tests and the use of nuclear weapons in war.

Fifty Years of Neurosurgery

By Ernest Sachs, M.D. 165 pages. New York: Vantage Press, 1958. Price $3.50.

Autobiographies should be written at the prime of life if for no other reason than to avoid the pitfalls which this one has encountered. Dr. Sachs recounts several episodes from his long and productive medical life which show poor taste and judgment since they deal with personal affronts. To one past his prime writing about such things is the only recourse left. At an earlier age I am sure that Dr. Sachs would have found many more important things to say.

This book is short. It reads easily. A period of life is described which points up the great importance of education, well taught and with much discipline. It should be of great interest to former students and neurosurgical colleagues.

Medical Radiation Biology

By Friedrich Ellinger, M.D., Chief Radiation Biologist and Head Pharmacology Division, Naval Medical Research Institute. 699 pages, with a 245 page bibliography. Springfield, Ill.: Charles C. Thomas. Publisher, 1957. Price $20.00.

This single volume is perhaps the most all inclusive book on medical radiation biology now available. It deals with ionizing radiations but includes information on other types of radiation used in medicine, particularly ultraviolet light. Part I is devoted to fundamental considerations of radiation biology, dealing with its effects on living matter, tissues, cells, chemistry, etc. Part II contains the biology of Ionizing Radiations and their effects on the individual tissues of the body, as well as effects on various activities taking place in those tissues. It also deals with the effects of ionizing radiation in individual tumors, both benign and malignant arising from various tissues or systems of the body. Radioactive isotopes and their use in medicine are covered, as well as the various health hazards and undesirable effects of ionizing radiation. Part III and Part IV deal with biology of ultraviolet radiation and photobiology respectively.

This book, because of its tremendously broad scope with detailed information, is of value to every doctor, persons in any phase of research which involves the use of various types of radiation and to those in preventive medicine and genetics.

Not the least valuable portion of this volume is its tremendous bibliography containing 4,600 references. In this reviewer's opinion, this is one of the most important volumes, if not the most important, to-date in this field. Dr. Ellinger is certainly to be complimented for this prodigious work for a single author.

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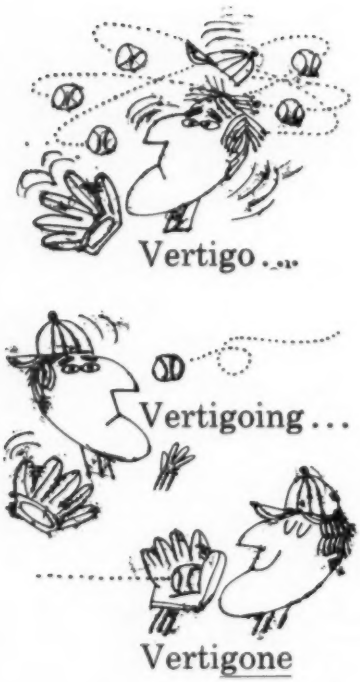

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Continued from page 1632

Dr. John C. Gilliland, Jackson, was one of the recipients of the annual Wyeth Laboratories pediatric residency fellowships awarded recently.

Dr. Guy T. Vise, Meridian, is the new President of the Mississippi Chapter of the American Academy of General Practice and Dr. William E. Lotterhos, Jackson, is the new Secretary.

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CLASSIFIED ADVERTISEMENTS

PRACTICE AVAILABLE—January 1, 1959. Solo practice, but share overhead expenses with another physician and dentist. Seven miles from medical center of Asheville, N. C. Modern clinic with full time technician. Contact LTC, c/o SMJ.

EQUIPMENT FOR SALE—2 Exam tables, 2 instrument cabinets, 3 lamps, 2 stools, 2 otoscopes, 1 ophthalmoscope, 1 laryngoscope, 1 nasopharyngoscope, 2 scales, 1 direct writer EKG, all surgical instruments, drugs and supplies, 1 blond oak desk with 3 chairs. First $1300.00 takes it all. Excellent opportunity for young GP. Contact LTC, c/o SMJ.

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Unopposed country practice for sale or lease. South Anne Arundel County near Annapolis, Maryland. Boating, fishing, hunting. $30,000-$40,000 gross. F. D. Hendricks, M.D., Federal Employee's Health Service, Denver Federal Center, Denver, Colorado.

WANTED—Physician, male or female in the Ozark foothills, only physician desires semiretirement. Ideal living conditions, all white population, 20 minutes from open staff hospital, large practice, 175 O.B. annually. 8 room equipped office, lease or sell. Contact Dr. Kirksey, Mulberry, Arkansas, Phone 2081.

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PHYSICIANS WANTED—Orthopedic Surgeon, also Pediatrician, to head departments. Excellent opportunity. Write Cooper Clinic, Cooper Clinic Building, Fort Smith, Arkansas.

LOCATION AVAILABLE—January 1, 1959. Excellent location available for physician planning to do eye, ear, nose and throat. Office, records and complete office equipment available as doctor desires to retire. Practice well established in present location for 34 years. Contact M. B. Seligstein, M.D., 67 Madison Avenue, Memphis 3, Tennessee.

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1. Friedlander, H.S.: Am. J. Cardiol. 1:395 (March) 1958.

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BECKER, M. C., Simon, F. and Bernstein, A.: J. Newark Beth Israel Hosp. **9**:58 (January) 1958.

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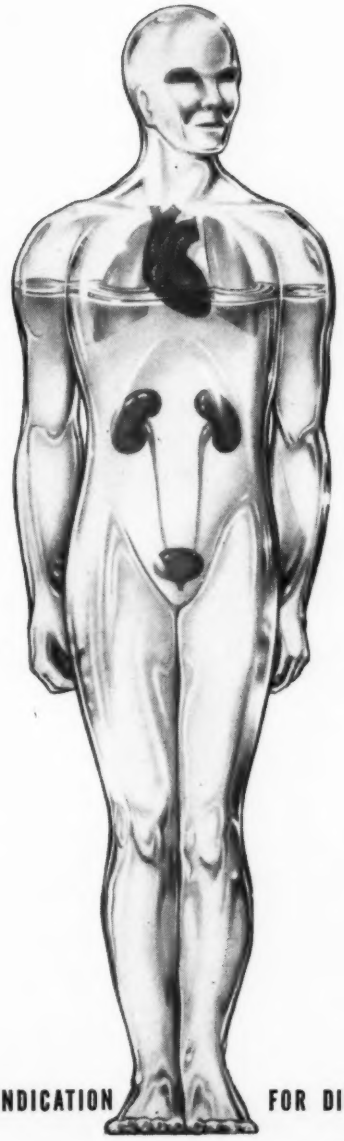

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Anesthesia	March 5-7, 1959
Pediatric Hematology	April 9-11, 1959

For detailed information write

DIRECTOR
DIVISION OF GRADUATE MEDICINE

1430 Tulane Ave. New Orleans 12, La.

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New additions to the faculty of the University of Mississippi Medical Center in Jackson include: Drs. Charles L. Dodgen, Associate Professor of Biochemistry; Berwind Kaufman, Associate Professor of Physiology; Emmett J. Johnson, Assistant Professor of Microbiology; M. A. Carnes, Assistant Professor of Anesthesiology; O. W. Hyman, Jr., Instructor in Radiology; and Edwin F. Chobot, Instructor in Neurosurgery.

MISSOURI

Dr. Arthur W. Neilson, St. Louis, President of the St. Louis Medical Society, has been appointed to membership on the Medical Advisory Committee of the St. Louis-St. Louis County Chapter of The National Foundation.

Dr. Lloyd S. Rolufs, Kirkwood, was elected President of the medical staff of St. Joseph's Hospital in Kirkwood at a recent meeting of the staff. Other officers elected were: Dr. Karl L. Keffler, St. Louis, President-Elect; and Dr. Harry C. Sammons, Kirkwood, Secretary-Treasurer.

Dr. Gretchen Collins, Macon, has been named Director of the health program for the Macon public schools for the 1958-59 year.

Dr. M. L. Gentry, Springfield, has been appointed Health Officer for the Springfield district it was

Continued on page 80

Specific antitussive action of Narcotine affords selective control of the cough reflex.

● non-toxic ● non-habit forming
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makes cough more productive

soothes bronchial irritation

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Citric Acid	50.0 mg.
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Alcohol	5.0%

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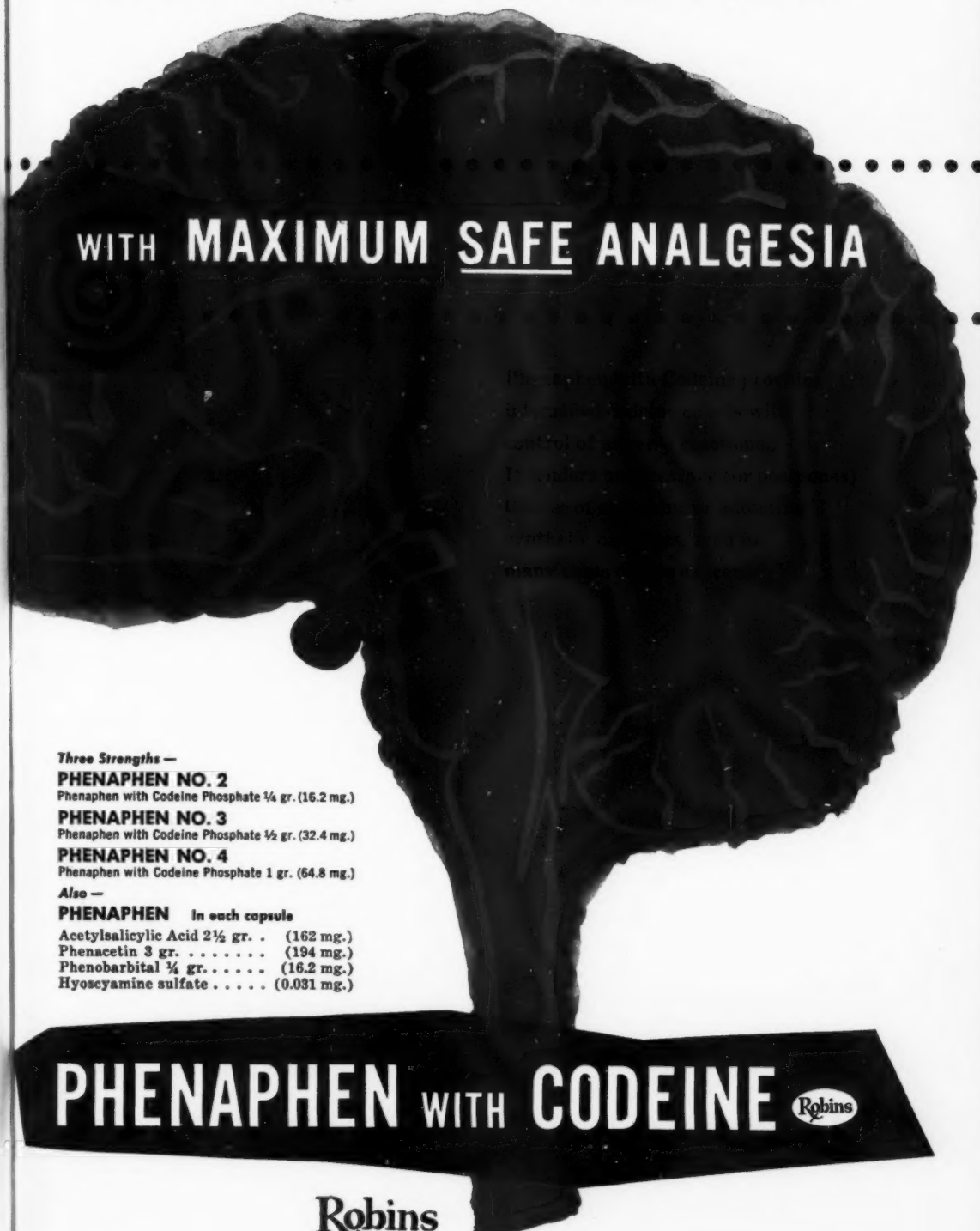

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Phenaphen with Codeine Phosphate ½ gr. (32.4 mg.)

PHENAPHEN NO. 4
Phenaphen with Codeine Phosphate 1 gr. (64.8 mg.)

Also —

PHENAPHEN In each capsule

Acetylsalicylic Acid 2½ gr. . (162 mg.)
Phenacetin 3 gr. . . . . (194 mg.)
Phenobarbital ¼ gr. . . . . (16.2 mg.)
Hyoscyamine sulfate . . . . . (0.031 mg.)

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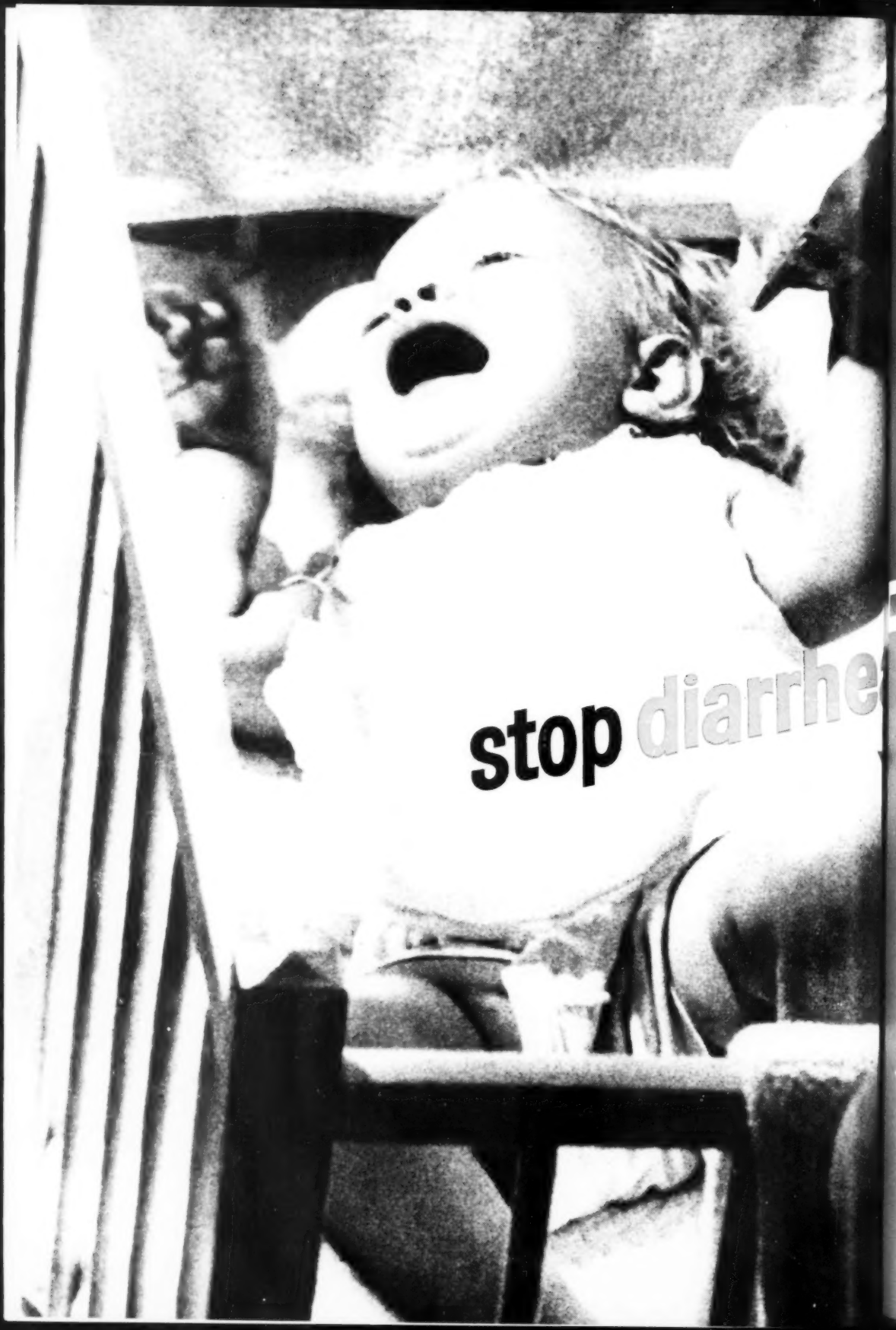
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IS THIS YOUR PATIENT?

1.

EARLY POSTMENOPAUSE

Complains of low back pain, vague aches and fatigue

Posture is poor

No x-ray evidence of bone lesions

2.

LATER POSTMENOPAUSE

Back pain is severe, spreading to hips ("girdle pain")

Patient is round shouldered, walks with a stoop

X-ray reveals compression fractures of lower vertebrae

3.

70 AND OVER

Fracture of hip after a minor fall

X-ray reveals fracture of neck of fem

X-ray reveals compression fractures of lower lumbar vertebrae

These three patients have osteoporosis. Early diagnosis and treatment with "Formatrix" is important because osteoporosis is probably the only age change that can be averted. With "Formatrix" therapy, relief from the symptoms of *low back pain, vague aches* and *fatigue* may be obtained in as little as a few weeks. "Formatrix" supplies the essential materials to stimulate increased bone formation and prevent further loss of bone substance that leads eventually to loss of height, stooped posture, and disabling fractures.

The highest incidence of osteoporosis may be found among the 14,000,000 women in the U.S.A. who are 55 years of age and over. Some investigators claim that almost all women past the menopause will show some degree of osteoporosis; furthermore, if all these women were examined carefully, 50 per cent would show x-ray evidence of decreased bone mass.

Suspicion may be the handiest diagnostic tool since p senting symptoms vary from mild to severe and capacitating pain, and no x-ray evidence of spinal de eration is available until about 30 per cent of the b matrix is lost. Between these two extremes there other signs of estrogen deficiency such as *wrinkled thinning skin,* a *tendency to appear older than s years;* there may also be *hypercalciuria* when postm pausal osteoporosis is complicated by acute osteopo of disuse.

Osteoporosis is primarily an atrophic condition of b matrix formation and any factor that depresses os blastic activity or retards the formation of protein connective tissue such as *prolonged immobilization, tisone therapy,* or *malnutrition* will favor develop of osteoporosis in both male and female.

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ORMATRIX" contains three most essential bone
lding materials necessary *for matrix* formation, estro-
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Vitamin C plays an important role in formation of inter-
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"Formatrix" has a large amount of vitamin C to aid in
new bone matrix formation and to further help in the
healing of fractures.

"FORMATRIX" – each tablet contains:

Conjugated estrogens equine ("Premarin"®)	1.25 mg.
Methyltestosterone	10.0 mg.
Ascorbic acid	400.0 mg.

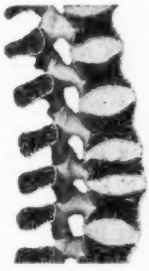
Dosage: 1 tablet a day – In the female, three weeks of treatment with a rest period of one week between courses is recommended.

Supplied: Tablets, bottles of 60 and 500. LITERATURE AVAILABLE ON REQUEST

1.

EARLY POSTMENOPAUSE
No x-ray evidence of bone lesion

2.



LATER POSTMENOPAUSE
X-ray reveals compression fracture of lower vertebrae

3.

70 AND OVER
X-ray reveals fracture of neck of femur

TO RELIEVE LOW BACK PAIN – TO PROMOTE HEALING OF FRACTURES

in osteoporosis

FORMĀTRIX®

(Brand of Steroid – Vitamin Combination)

for matrix formation

Continued from page 71

announced by Dr. H. M. Hardwicke, Jefferson City, acting director of the Missouri Division of Health.

New President of the Burge Hospital staff is Dr. M. W. Dietz, who succeeds Dr. Joseph Siceluff. Other officers elected include Drs. E. H. Rainwater, President-Elect; Don Gose, Secretary; and Albert Simpson, Treasurer, all of Springfield.

Dr. Ralph Perry, President-Elect of Missouri State Medical Association, Kansas City, was honored with a luncheon recently for his services to his community, both as a physician and a citizen, by the East Business and Professional Association of Kansas City. Dr. Perry was presented a plaque in recognition of his service and devotion to his community.

Dr. Wendell G. Scott, Professor of Clinical Radiology at Washington University School of Medicine, St. Louis, has been notified of promotion to the rank of Rear Admiral in the Navy Reserve Medical Corps. Dr. Scott, who is President of the American Roentgen Ray Society, has been reserve consultant in radiology since 1946 for the surgeon general's bureau of medicine and surgery for development of rehabilitation services.

Dr. James N. Haddock, St. Louis, was elected President of the Mid-Continent Psychiatric Association at its recent convention in Wichita, Kansas.

Dr. Peter J. Danis, Professor of Clinical Pediatrics at St. Louis School of Medicine, has been appointed a member of the Advisory Committee to the National Cerebral Palsy Association.

NORTH CAROLINA

It has been announced that Dr. Norman H. Conant, Professor of Mycology at Duke University School of Medicine, has been appointed Chairman of the Department of Microbiology to succeed Dr. David T. Smith, who has been head of the department since the school of medicine opened in 1930. Dr. Smith resigned as Chairman in order to devote more time to teaching and research.

Dr. Warren D. Grover, Camp LeJeune, was one of the recipients of the annual Wyeth Laboratories pediatric residency fellowships.

Dr. James T. Proctor, Assistant Professor of Psychiatry of the University of North Carolina School of Medicine, is Chairman of the fall regional meeting of the American Association of Psychiatric Clinics for Children.

Dr. W. Reece Berryhill, Dean of the University of North Carolina School of Medicine, has been elected Vice-President of the Association of American Medical Colleges.

Dr. Howard H. Bradshaw, Professor and Director of the Department of Surgery, Bowman Gray School of Medicine, was named Chairman of the Board of Governors of the American College of Surgeons at the Clinical Congress in Chicago, Illinois. Dr. Bradshaw was also recently named an examiner on the National Board of Medical Examiners and the American Board

Continued on page 83

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Each nugget contains:			
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Vitamin C	75 mg.	Fluorine	0.1 mg.
Vitamin E	2 Units†	Iodine	0.2 mg.
Vitamin B-1	2.5 mg.	Magnesium	3.0 mg.
Vitamin B-2	2.5 mg.	Manganese	1.0 mg.
Vitamin B-6	1 mg.	Molybdenum	1.0 mg.
Vitamin B-12 Activity	3 mcg.	Potassium	2.5 mg.
Panthenol	5 mg.	*U.S.P. UNITS †INT. UNITS	
Nicotinamide	20 mg.	Dose: One Nugget per day	
Folic Acid	0.1 mg.	Supplied: Boxes of 30—one month's supply	
Biotin	30 mcg.	Boxes of 90—three months' supply or family package.	
Rutin	12 mg.		
Calcium Carbonate	125 mg.		

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PARAFON relieves pain, stiffness, and disability caused by rheumatism and traumatic disorders; PARAFON WITH PREDNISOLONE compounds this relief with anti-inflammatory action in treatment for arthritis.

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precautions: The precautions and contraindications that apply to all steroids should be kept in mind when prescribing PARAFON WITH PREDNISOLONE.

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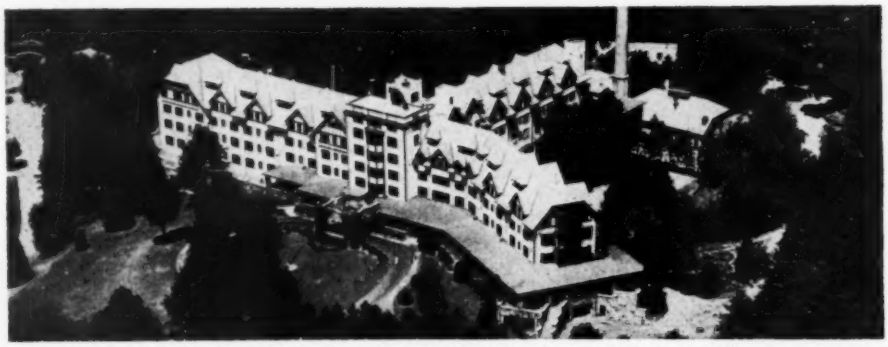

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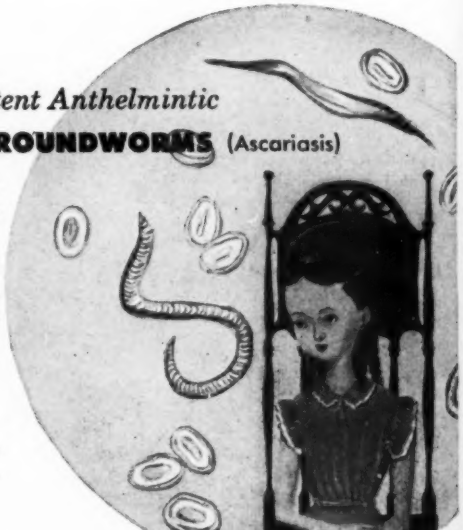
VERMIZINE *Most Potent Anthelmintic*

against **PINWORMS** (Oxyuriasis) AND **ROUNDWORMS** (Ascariasis)



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Continued from page 80

of Surgery. This year he was appointed an associate editor in surgery of *Geriatrics*. In the summer he was appointed by the National Institutes of Health as special consultant to the National Cancer Institutes.

Dr. Richard C. Proctor, Assistant Professor of Psychiatry, Bowman Gray School of Medicine, has been elected Secretary-Treasurer of the Southern Psychiatric Association.

Dr. Harold D. Green, Professor of Physiology and Pharmacology, Bowman Gray School of Medicine, is serving on the Postdoctoral Fellowship Committee of the National Science Foundation.

Dr. Wingate M. Johnson, Professor of Clinical Internal Medicine, Bowman Gray School of Medicine, has been appointed to the North Carolina Governor's Coordinating Committee on Aging. He is also a member of the Committee on Aging of the American Medical Association.

OKLAHOMA

Dr. Donald W. Branham, Oklahoma City, is a recent addition to the editorial staff of the Journal of the Oklahoma State Medical Association. Dr. Branham also holds a Fellowship in the American Medical Writers Association.

The Oklahoma Society of Anesthesiologists has elected the following officers: President, Dr. Carl H. Guild, Jr., Tulsa; President-Elect, Dr. Harlan K.

Continued on page 88

effective, practical

MUMPS VACCINE

A specific immunizing antigen (chick embryo origin) for prevention or modification of mumps in children and adults.

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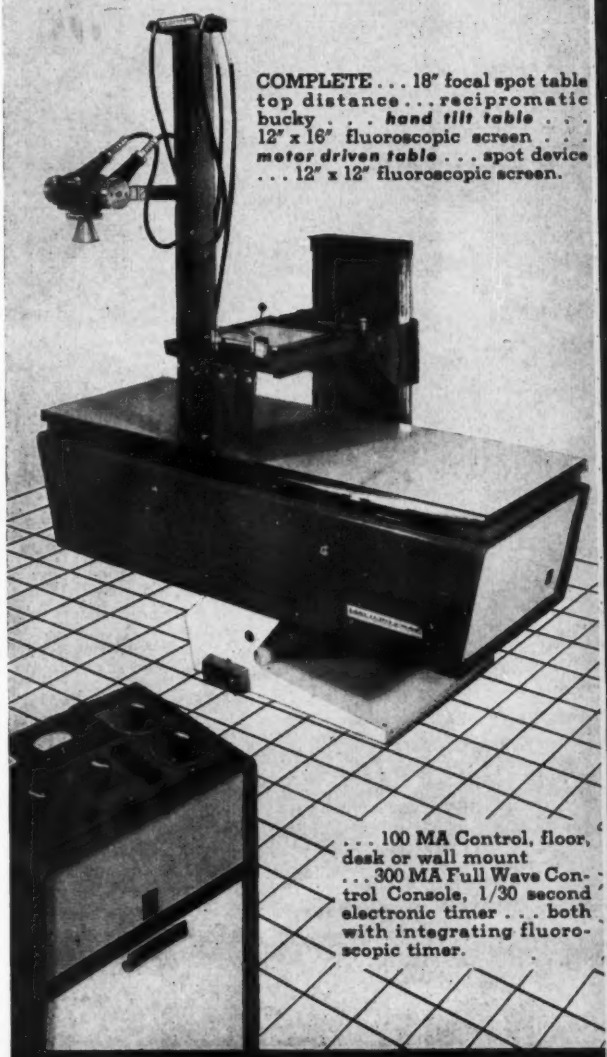

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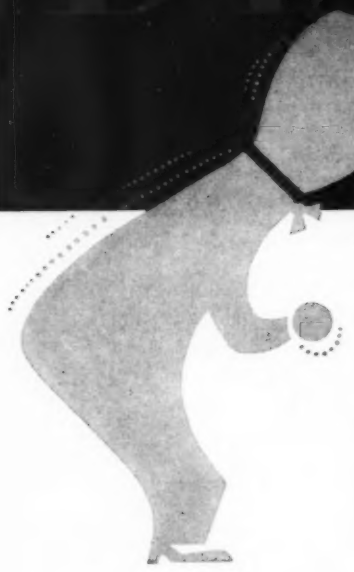

"In a series of 176 patients...a valuable adjunct to therapy...highly selective action...that cannot be duplicated by any other current remedy ...effective as a euphoriant...and as an energizing agent against weakness, fatigue, adynamia, and akinesia...potent action against sialorrhea, diaphoresis, oculogyria, and blepharospasm... also lessens rigidity and tremor...minimal side reactions...safe...even in cases complicated by glaucoma."

Doshay, L.J., and Constable, K.: Treatment of Paralysis Agitans with Orphenadrine (Disipal) Hydrochloride: Results in One Hundred Seventy-Six Cases, J.A.M.A. *163*:1352 (Apr. 13) 1957.

in Skeletal Muscle Spasm

due to sprains, strains, herniated intervertebral disc, low back pain, whiplash injuries and many other painful skeletal muscle disorders, Disipal brings effective and prompt relief from spasm and pain. "The number of office visits...is reduced significantly. The dosage schedule is simple, and side actions are minimal."

Finch, J.W.: Clinical Trial of Orphenadrine (Disipal) in Skeletal Muscle Disorders. Scientific Exhibit at Mississippi Valley Medical Society Meeting, St. Louis, Missouri, Sept. 3-5, 1957.

Advantages

- Speedy relief of muscle spasm
- Orally effective
- Minimal side actions
- Mildly euphoriant
- Nonsoporific
- Tolerance no problem
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- Economical

Dosage:
Usually 1 tablet (50 mg.) t.i.d.

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nasal and paranasal congestion and control secondary invaders

Now, a single unique preparation, Trisulfaminic, can provide dramatic relief from congestion, and at the same time protect the patient from secondary bacterial invaders. Often within minutes of the first dose, congestion begins to clear; the patient can breathe again.

Trisulfaminic is particularly valuable for the "almost well" patient who is recovering from influenza but is left with congested nasal and bronchial passages. And for patients with purulent rhinitis, sinusitis or tonsillitis, combination therapy with Trisulfaminic offers a most realistic approach to total treatment.

Oral Decongestant Action. Through the action of Triaminic, nasal patency is achieved rapidly and dramatically. Adequate ventilation helps eliminate mucus-harbored pathogens. And because Trisulfaminic is administered *orally,* there is no problem of rebound congestion, no pathological change wrought in the nasal mucosa.

Wide-Spectrum Action. Secondary bacterial infections, which are always a threat in upper respiratory involvement, are forestalled by the wide-spectrum effectiveness of triple sulfonamides. This added antibacterial protection makes Trisulfaminic highly useful in treating the debilitated patient who is prone to lingering or frequently recurring colds.

Trisulfaminic *tablets and suspension*

TRIAMINIC PLUS TRIPLE SULFAS

Each Tablet and each 5 ml. teaspoonful of Suspension contains:

Triaminic®	25 mg.
(phenylpropanolamine HCl	12.5 mg.;
pheniramine maleate	6.25 mg.;
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Trisulfapyrimidines U.S.P.	0.5 Gm.

Dosage: Adults—2 to 4 tablets or teaspoonfuls initially, followed by 2 tablets or teaspoonfuls every 4 to 6 hours until the patient has been afebrile for 3 days. Children 8 to 12 years—2 tablets or teaspoonfuls initially, followed by 1 tablet or teaspoonful every 6 hours. Younger children—dosage in proportion.

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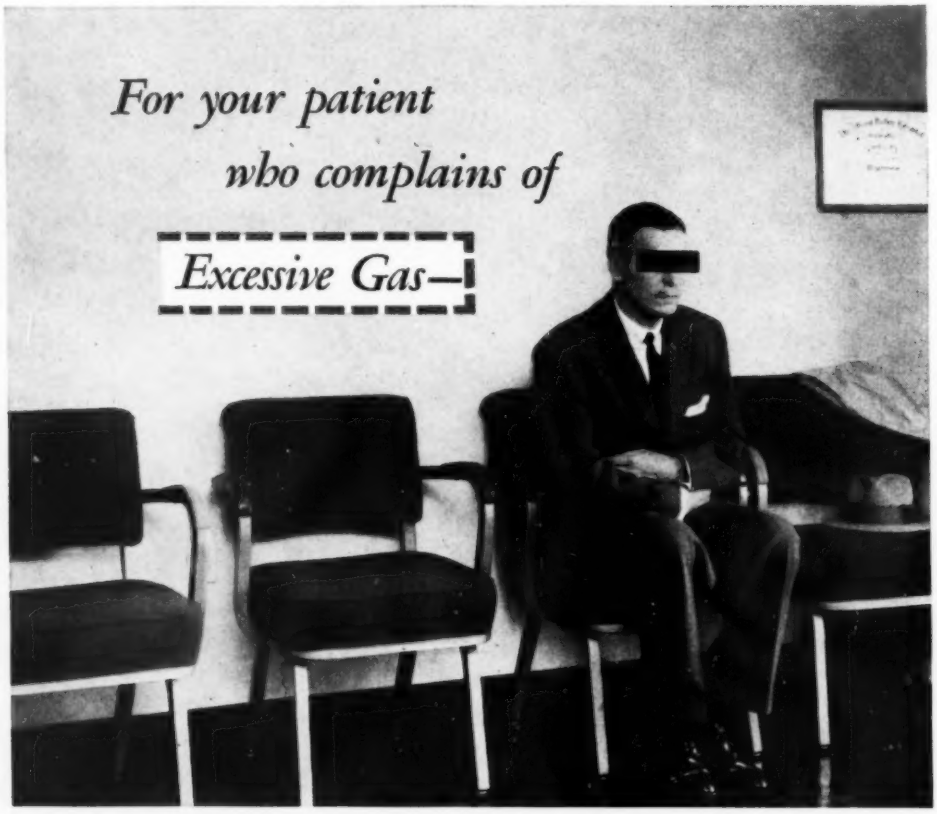

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Based upon the remarkable results obtained with ILOPAN (parenteral pantothenyl alcohol, W-T, for the management of post-operative distention due to flatus and feces), an oral form is now made available for ambulatory patients—ILOPAN-CHOLINE Tablets. And choline has been added as a precursor to all-important acetylcholine.

Clinical results with ILOPAN-CHOLINE Tablets in ambulatory patients, ages 20 to 80 years, have been surprisingly excellent . . . 90% effective according to three independent and separate clinical evaluations.

COMPOSITION: Each tablet contains Ilopan (brand of d-pantothenyl alcohol) 50 mg., choline bitartrate 25 mg.

INDICATIONS: Gas retention in the atonic gastrointestinal tract of ambulatory patients, geriatric digestive problems complicated by flatulence, laxative withdrawal.

DOSAGE: Two tablets three times daily. Three tablets three times daily in severe cases.

HOW SUPPLIED: Bottles of 100 and 500.

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Continued from page 83

Sowell, Oklahoma City; and Secretary-Treasurer, Dr. Lawrence Stream, Oklahoma City.

Dr. Bert T. Brundage, Thomas, has been appointed by Governor Raymond Gary as a member of the State Board of Health to succeed Dr. Roy L. Fisher, of Frederick, who has resigned.

SOUTH CAROLINA

The South Carolina Chapter of the American Academy of General Practice has installed the following officers: President, Dr. Homer M. Eargle, Orangeburg; President-Elect, Dr. I. Ripon Wilson, Charleston; Vice-President, Dr. William T. Hendrix, Spartanburg; and Secretary-Treasurer, Dr. Horace M. Whitworth, Greenville.

Dr. Kenneth M. Lynch, Jr., Dean of the Faculty of the Medical College of South Carolina, has been honored by award of the "Medallion and Citation" of the American Cancer Society for "outstanding service in the cause of cancer control."

The South Carolina Obstetrics and Gynecology Society has elected the following officers for the coming year: Dr. W. A. Hart, Columbia, President; Dr. David Watson, Greenville, President-Elect; and Dr. Albert Baroody, Florence, was re-elected Secretary-Treasurer.

TENNESSEE

The Memphis Thoracic Society has elected as its officers Dr. Francis H. Cole, President; Dr. J. Cash King, Vice-President; and Dr. Glenn E. Horton, Secretary-Treasurer.

Dr. Amos Christie, Nashville, has been appointed by the Governor to the Board of Trustees of the State Department of Mental Health. Dr. Joseph W. Johnson, Jr., of Chattanooga, is also a member of the Board.

Dr. James W. Richardson, Morristown, has been named a member of the Board of the East Tennessee Heart Association.

Dr. C. N. Keatts, Indian Mound, was recently honored for 57 years of practice of medicine in Steward and adjoining counties.

Dr. Ira S. Pierce, Jr., Knoxville, has been reappointed County Physician.

The following physicians have been elected as officers by the East Tennessee Radiological Society: Dr. Edward K. Carter, Kingsport, President; Dr. Eugene Abercrombie, Knoxville, President-Elect; Dr. John M. Higgason, Chattanooga, Vice-President; and Dr. Charles W. Reavis, Chattanooga, Secretary-Treasurer.

The "Emeritus" title has been added to the following members of the faculty of the Vanderbilt University School of Medicine: Drs. John B. Youmans, Hugh J. Morgan, Hollis E. Johnson, C. C. McClure, Amie T. Sikes, John S. Cayce, and Milton S. Lewis.

TEXAS

Dr. Milford O. Rouse, Dallas, was installed as President of the Southern Medical Association at its annual meeting held in New Orleans, Louisiana. Dr.

Satisfied with the usual cough remedies?

—do you find that the local soothing effect of cough syrups is not enough?

—are you concerned about the side effects of codeine?

—do you find that many remedies decrease cough productivity?

—do you have patients who do not cooperate fully because of cumbersome forms of issue and too frequent dosage?

C I B

SUMMIT,

Rouse has been a member of Southern Medical since 1924.

Dr. Cyril J. Ruilmann, Director of Mental Health and Hospitals, Board of Texas State Hospitals and Special Schools, has been elected Chairman of the Southern Regional Council on Mental Health Training and Research for 1958-59.

Dr. Lee D. Cady, Manager, Veterans Administration Hospital, Houston, was elected to the Executive Committee of the new medical school, Teaching Hospital Section of the Association of American Medical Colleges, at a recent meeting of the Association.

Dr. Carl A. Nau, Galveston, has been named one of the winners of the "Industrial Health Awards," presented annually at the Health Conference for Business and Industry in Houston to persons or organizations for their "outstanding contributions in the field of industrial health."

Dr. William M. Lindsey, Dallas, has been appointed to the medical staff of Southwestern Life Insurance Company in Dallas home offices.

Dr. Michael E. DeBakey, Professor of Surgery at Baylor University College of Medicine, Houston, has received the Alvarenga Prize of the College of Physicians of Philadelphia for outstanding work in the surgical treatment of the diseases of blood vessels.

Dr. Rodger G. Smyth, San Antonio, has been named head of the City Health Department Chest Clinic in San Antonio.

Continued on page 94

CITY VIEW
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For the diagnosis and treatment of nervous and mental disorders, and addiction to alcohol and drugs.

Established 1907

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If not...
here's why you should try new Tessalon Perles

controls cough by dual action—in the chest as well as at cough centers of the brain.
2½ times as effective as codeine[1] without the side effects of codeine.
controls cough frequency without decreasing productivity or expectoration.
Perles offer convenient, precise dosage and relief for 3 to 8 hours.

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atric *Perles*, 50 mg. (red).
atric *Perles available Oct. 1, 1958.*
ane, S. J., Krzyski, T. K., and Copp, S. E.:
d. M.A.J. 77:600 (Sept. 15) 1957.

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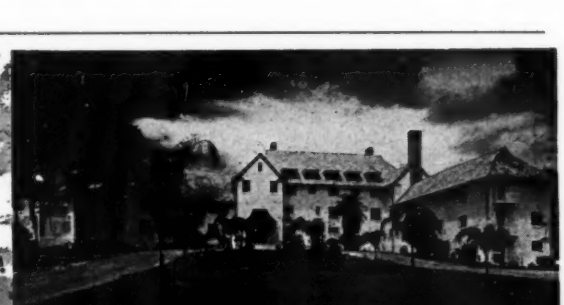

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HIGH TISSUE LEVELS

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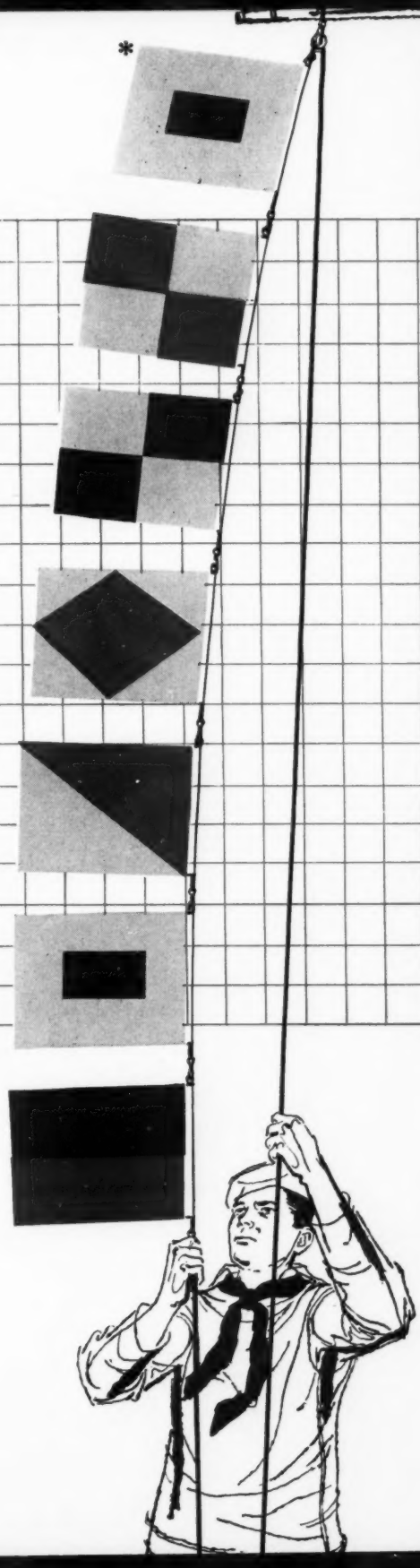
LOW TOXICITY



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William G. Sauer, M.D. .....*Rochester, Minn.*
William Dameshek, M. D. .....*Boston, Mass.*
B. Marden Black, M.D. .....*Rochester, Minn.*
Warren H. Cole, M.D. .....*Chicago, Ill.*
Denton A. Cooley, M.D. .....*Houston, Texas*
Averill A. Liebow, M.D. ...*New Haven, Conn.*
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Each nugget contains:

Vitamin A	5,000 Units*	Boron	0.1 mg.
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Vitamin C	75 mg.	Fluorine	0.1 mg.
Vitamin E	2 Units†	Iodine	0.2 mg.
Vitamin B-1	2.5 mg.	Magnesium	3.0 mg.
Vitamin B-2	2.5 mg.	Manganese	1.0 mg.
Vitamin B-6	1 mg.	Molybdenum	1.0 mg.
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Nicotinamide	20 mg.		
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Dose: One Nugget per day
Supplied Boxes of 30—one month's supply
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*Ford, R.V., and Moyer, J.H.: Rauwolfia Toxicity in the Treatment of Hypertension, Postgrad. Med. *23*:41 (Jan.) 1958.

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Enhances safety when more potent drugs are needed.

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alseroxylon 1 mg. and alkavervir 3 mg.
for moderate to severe hypertension.
Initial dose, 1 tablet t.i.d., p.c.

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alseroxylon 1 mg. and hexamethonium chloride dihydrate 250 mg.
in severe, otherwise intractable hypertension. Initial dose, ½ tablet q.i.d.

Both combinations in convenient single-tablet form.

just two tablets at bedtime
After full effect one tablet suffices

Riker
NORTHRIDGE, CALIFORNIA

Continued from page 89

VIRGINIA

The Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Virginia, will hold its Thirty-Second Annual Spring Congress in Ophthalmology and Otolaryngology and Allied Specialties, April 6 through 11, 1959.

Dr. James R. Cash, Charlottesville, Walter Reed Professor of Pathology, University of Virginia Department of Medicine, has been appointed Professor of Pathology at the Basic Medical Science Institute in Karachi, Pakistan.

New officers for the Washington County Medical Society are: President, Dr. S. E. Miller, Abingdon; Vice-President, Dr. H. M. Hayter, Abingdon; and Secretary-Treasurer, Dr. J. M. Suter, Bristol.

Dr. Harry C. Bates, Jr., Arlington, has been named a member of the Atomic Energy Study Committee of the Virginia Advisory Legislative Council.

Dr. Edward M. Holmes, Jr., Richmond, has been assigned to the Technical Mission Branch of the International Corporation Administration in New Delhi, India. He will serve as consultant to the All India Institute of Medical Sciences and as loan Professor of Preventive Medicine for the next two years.

Dr. Frederick A. Clark has been appointed as Director of Public Health of the City of Richmond.

Dr. Hiram W. Davis, Commissioner of the Virginia

Continued on page 97

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RICHMOND, VIRGINIA

A private hospital for diagnosis and treatment of psychiatric and neurological patients. Hospital and out-patient services.

(Organic diseases of the nervous system, psychoneuroses, psychosomatic disorders, mood disturbances, social adjustment problems, involutional reactions and selective psychotic and alcoholic problems.)

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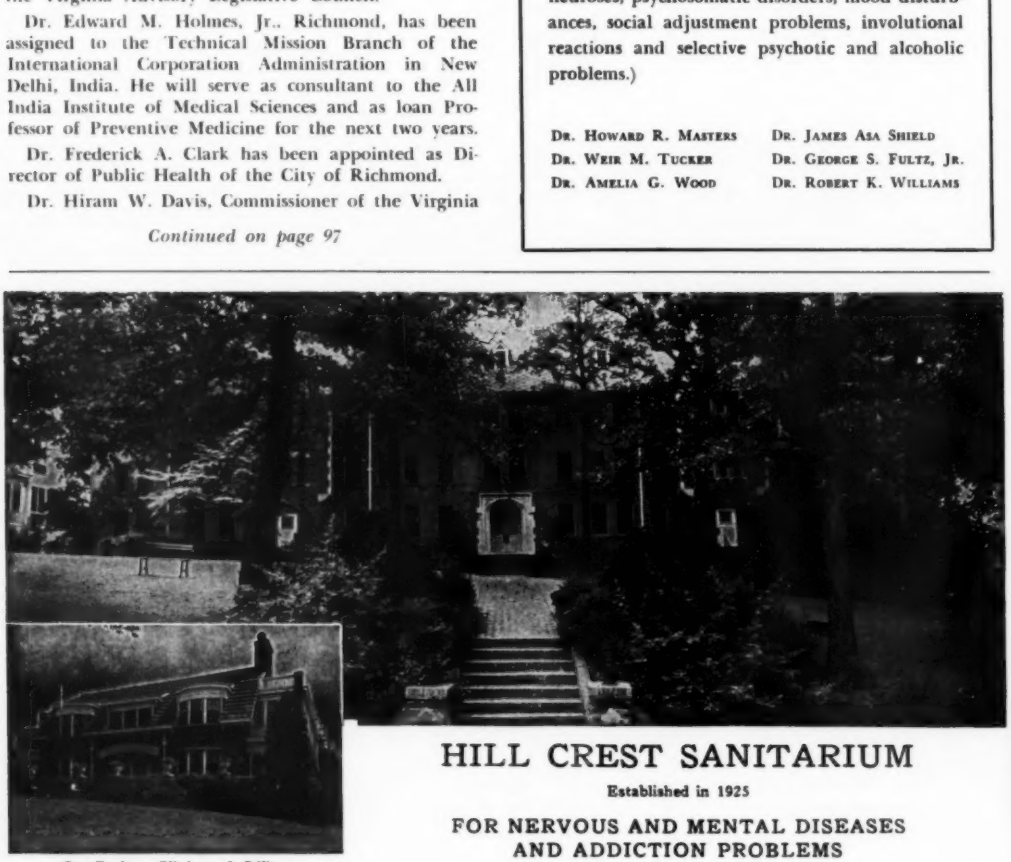

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FOR NERVOUS AND MENTAL DISEASES AND ADDICTION PROBLEMS

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BLOOD VOLUME DETERMINATIONS BY IHSA?

Are you estimating blood volume on the basis of height and weight or do you use the Evans blue dye method? You can now eliminate the inherent errors of spectrophotometer readings of colored blood, the bother of a series of volumetric measurements, and the danger of skin discoloration . . . all of which are associated with the dye method . . . by using the new technique of choice—Iodine 131 tagged Human Serum Albumin.

In this technique, an injected dose of Iodinated Human Serum Albumin is allowed to mix thoroughly with the patient's blood. This takes about ten minutes. A blood sample is then withdrawn, and the ratio of the activity in the dose volume to an equal volume of aspirated blood times the volume being measured gives the total blood volume. Since the IHSA stays with the plasma, the red cells may be centrifuged down, and a separate value for plasma readily obtained.

The Picker Well Type Scintillation Detector

All measurements are carried out in a well type scintillation detector connected to a scaler. We have a detector of this type which features a sample capacity of 15 cc instead of the usual 5 cc. This allows a dosage reduction by a factor of two. Our detector also has a 2" lead shield on all sides, a counter-balanced hinged lid, and a splash guard to prevent contamination of the crystal.

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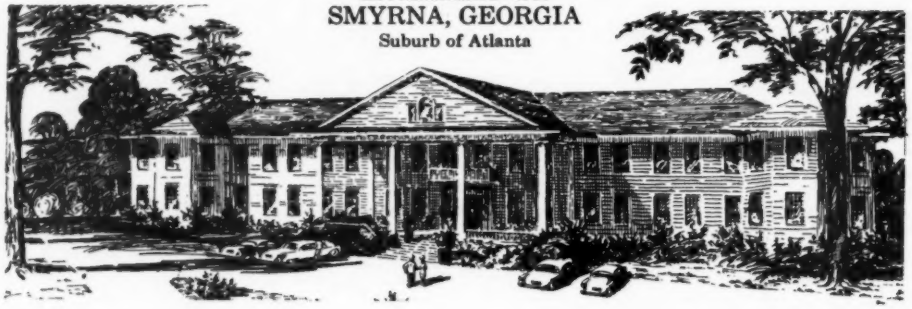

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Continued from page 94

Department of Mental Hygiene and Hospitals, Richmond, has been elected to the Executive Committee of the Southern Regional Council on Mental Health Training and Research.

WEST VIRGINIA

Dr. William R. Laird, Montgomery, received the Distinguished Service Award of the American College of Surgeons during the annual meeting of the Clinical Congress in Chicago, Illinois. Dr. Laird was one of the two doctors named to receive the award, which is one of the highest that is presented to a member of the organization.

Dr. Colin A. Anderson, Assistant Superintendent of Butner State Hospital, Butner, North Carolina, has been named acting superintendent of the West Virginia Training School at St. Marys.

Dr. Margaret T. Ross, Beckley, has been appointed Director of the Division of Community Services of the State Department of Mental Health.

Dr. Mildred Mitchell-Batemann, Lakin, has been appointed Superintendent of the Lakin State Hospital, succeeding Dr. S. O. Johnson.

Dr. James H. Wolverton, Jr., Piedmont, has been elected President of the West Virginia Heart Association. Other officers include: Dr. J. J. Jenkins, Jr., Fairmont, President-Elect; Dr. Andrew C. Woofter, Parkersburg, Vice-President; and Dr. James H. Walker, Charleston, Secretary.

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Ground 600 Acres — Buildings, Brick

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Eminently valuable too are its unsurpassed digestibility, its content of minerals and lipotropic factors, its virtually ideal nutritional *balance*—for normal CO-ACTION of essential nutrients, a synergism indispensable to enduring vigor.[1, 3]

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For prevention and in dietotherapy of many disorders throughout THE SECOND FORTY YEARS, *prescribe as a routine supplement*

VITA-FOOD Brewers' Yeast

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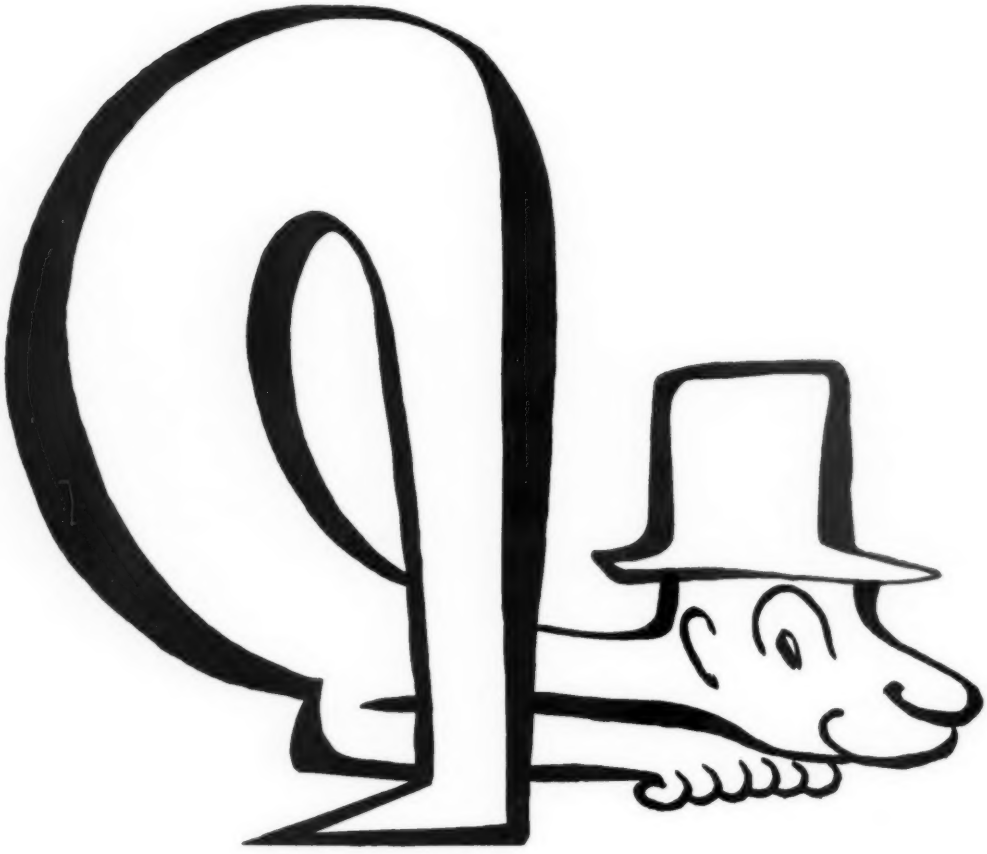

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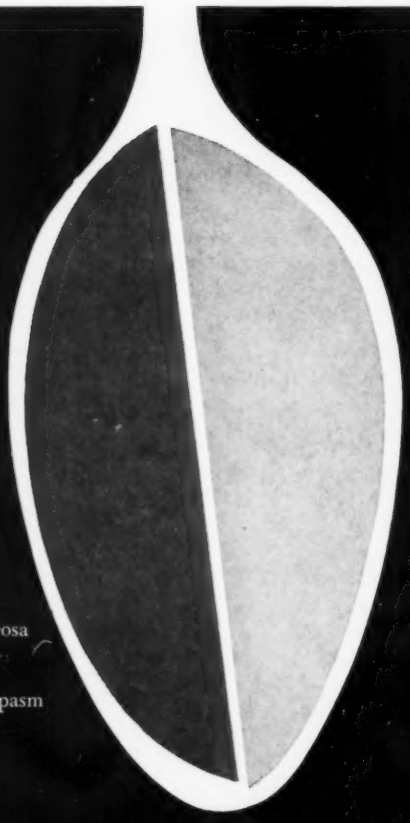

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